

FINAL FIELD SAMPLING AND ANALYSIS REPORT
LONG LAKE - MITCHELL, ILLINOIS

BY:
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ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
REGION 6 - FIELD OPERATIONS SECTION
BUREAU OF LAND
2009 MALL STREET
COLLINSVILLE, ILLINOIS 62234
JUNE 1999

Folder

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3.2 Sediment

A total of eight (8) sediment samples were taken during this sampling event. The sediment samples were labeled X101 through X108. The sediment samples were taken at the same locations as the surface water samples. Samples X107 and X106 were obtained from a boat using separate and clean stainless steel bucket augers. Samples X105 through X101 were taken by wading to the middle of the lake. The sample depth of the sediment samples was 0 - 10 inches. The samples were removed from the auger using separate and clean stainless steel scoops. Each sample was placed into 16-ounce glass jars. Sample X108 was obtained from on top of the culvert using a bucket auger on an extension pole.

The sediment samples were analyzed for pH, total organic carbon, phenols, mercury (total and TCLP), magnesium, arsenic (total and TCLP), antimony (total and TCLP), barium (total and TCLP), beryllium (total and TCLP), chromium (total and TCLP), cobalt, lead (total and TCLP), nickel (total and TCLP), silver (total and TCLP), thallium (total and TCLP), zinc, calcium, sodium, aluminum, boron, cadmium (total and TCLP), copper, iron, manganese, selenium (total and TCLP), strontium, vanadium (total and TCLP) and potassium.

3.3 Slag

A sample of the slag road was obtained during this sampling event. The sample was taken using a stainless steel scoop. Slag of various sizes was collected and placed in a 32-ounce glass jar. This sample was labeled X201. Sample X201 was analyzed for mercury (total and TCLP), magnesium, arsenic (total and TCLP), antimony (total and TCLP), barium (total and TCLP), beryllium (total and TCLP), chromium (total and TCLP), cobalt, lead (total and TCLP), nickel (total and TCLP), silver (total and TCLP), thallium (total and TCLP), zinc, calcium, sodium, aluminum, boron, cadmium (total and TCLP), copper, iron, manganese, selenium (total and TCLP), strontium, vanadium (total and TCLP) and potassium.

What appears to be secondary copper slag has been used to construct a road and a culvert system through Long Lake. Various sizes of slag, ranging from fines to boulders, was used as fill for this road. The slag extended into the lake and was in contact with the water.

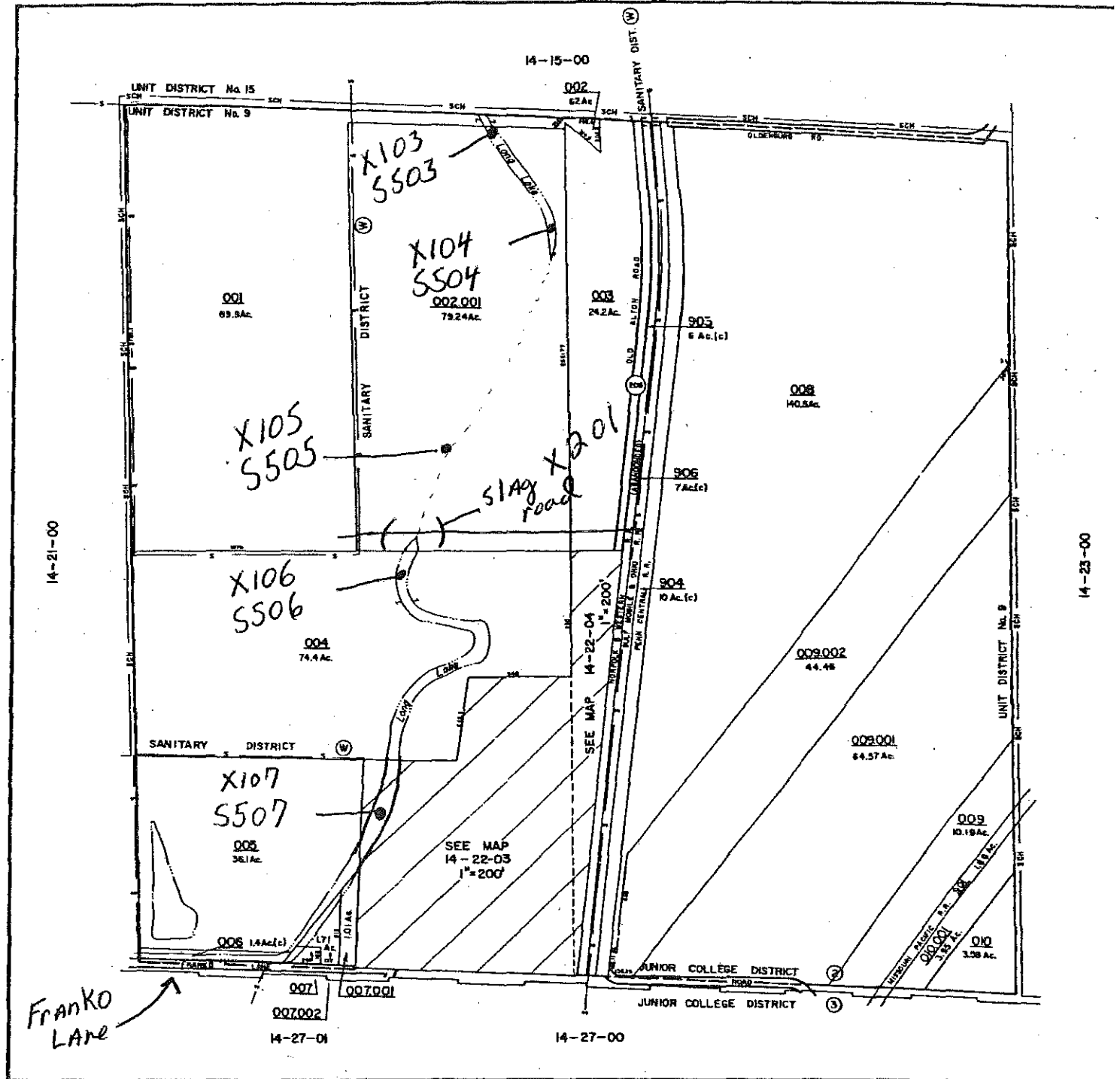
3.4 Sample Preservation

All surface water samples were preserved using nitric acid. The appropriate amount of nitric acid, about ten drops, was added to each sample to lower the pH to below 2.0. The samples were sealed with evidence tape and placed in an iced cooler for shipment to the laboratory.

TABLE 4.3.1
Slag Samples
Total and TCLP Metal Concentrations

	Total (mg/kg)	TCLP (mg/l)	TCLP Limits ¹ (mg/l)
Aluminum	11,000	--	--
Barium	240	2.0	100.0
Beryllium	18	0.057	--
Boron	51	--	--
Cadmium	7.9	0.270	1.0
Calcium	19,000	--	--
Chromium	72	0.035	5.0
Cobalt	68	--	--
Copper	1,600	--	--
Iron	120,000	--	--
Lead	2,900	14.0	5.0
Magnesium	6,600	--	--
Manganese	1,400	--	--
Nickel	370	0.610	--
Potassium	1,400	--	--
Selenium	9.2	0.010K	1.0
Sodium	510	--	--
Strontium	45	--	--
Thallium	9.2	0.010K	--
Vanadium	32	0.005K	--
Zinc	34,000	--	--

II Title 35: Environmental Protection - Subtitle G: Waste Disposal - Chapter I: Pollution Control Board - Subpart C: Characteristics of Hazardous Waste - Section 721.124 Toxicity Characteristic



CHOUTEAU TOWNSHIP MADISON COUNTY, ILLINOIS

LEGEND				SPECIAL DISTRICTS			
STATE OR COUNTY LINE	EASEMENT LINE	ORIGINAL SUBDIVISION BLOCK NO.	SECTION IN FEET (Horizontal)	TOWN	RANGE	WEST	SECTION
TOWNSHIP, CITY, TOWN LINE	PROPERTY LINE	ORIGINAL SUBDIVISION LOT & NO.	SECTION IN FEET (Vertical)				
SECTION LINE	LAND MOOR	AREA IN ACRES (From Deed)	SECTION IN FEET (Diagonal)				
HIGHWAY & STREET R/W	WATER	AREA IN ACRES (Calculated)	SECTION IN FEET (Diagonal)				
BLOCK LIMIT LINE	BLOCK NO.	SECTION IN FEET (From Deed)	SECTION IN FEET (Diagonal)				
RAILROAD R/W	PARCEL NO.	SECTION IN FEET (From Deed)	SECTION IN FEET (Diagonal)				
CLT BALANCED GOVERNMENTAL SERVICES AT		REAL PROPERTY MAP PREPARED FOR MADISON COUNTY BOARD MEMBERS		CONGRESSIONAL TOWNSHIP NO.			
The Mapping Division COLE-LUTHER-MUMFORD COMPANY AN AMERICAN APPRAISAL ASSOCIATION CO. 301 E. Madison Street, Chicago, Ill. 60601		DATE OF MAP: APRIL 23, 1973 DATE OF REVISION:		SECTION 22			
Map & Plat Department COUNTY OF MADISON (Established, 1809)		SCALE: 1" = 400'		TOWN 04 NORTH, RANGE 09 WEST			
				14-22-00			
				MAP NUMBER			

Figure 4-3

LP41 119000 200
 Section [14] F USEPA # N/A

County Madison Locality Mitchell/L. Lake
 Site Name [19] Mitchell / Long Lake

Project Manager's Name and Mailing Address
 Chris Cahnovsky

Section/Unit BOL/FOS Collinsville

EPA Laboratory Address and Phone Number (circle one)
 2125 S. 1st Street Champaign, IL 61820, 217/333-6907
 825 N. Ruedge Street Springfield, IL 62702, 217/782-9780

Phone # 618/346-5120	Parameter Group [03] & Other Analytes [12]	S A V E #	Field Sample #	Date Collected & Sealed	Time Collected (24 hr clk)	Time Sealed (24 hr clk)	Sampler's Initials	Special Notations	Seal Intact (y/n)
Case # (if applicable)	SWAST	Split: "2" Is yes							
Lab Sample # [01]	SWAST								
B903265	X	NN	X101	3/16/99	11:25	14:35	CNC	Total Metals w/	
B903266	X	NN	X102	3/16/99	11:00	14:35	CNC	Zinc & Copper	
B903267	X	NN	X103	3/16/99	10:25	14:35	CNC	"	
B903268	X	NN	X104	3/16/99	10:05	14:35	CNC	"	
B903269	X	NN	X105	3/16/99	9:50	14:35	CNC	"	
B903270	X	NN	X106	3/15/99	11:00	15:30	CNC	"	
B903271	X	NN	X107	3/15/99	10:45	15:30	CNC	"	
B903272	X	NN	X108	3/16/99	11:45	14:35	CNC	"	
B903273	X	NN	X201	3/15/99	11:10	15:30	CNC	TCLP Metals	
Return Results to Chris Cahnovsky 618/346-5120									

Receipt for Samples: Collection of the above-listed sample(s) at the indicated site is hereby acknowledged. Split(s) Offered? y / n Accepted? y / n

Signature/Title of Facility Representative, Date
 Samplers (printed names and signatures)
 Chris Cahnovsky Mike Grant
 Sealer: I certify that the samples listed above were sealed by me and I wrote my initials, the date, and the time on the seal(s).
 Sealer's Signature & Initials Date Time (24 hr clk)
 CNC 3/16/99 14:35

Carriers: I certify that I received the container(s) holding the above sample(s) with the seal(s) intact and the sealer's initials and sealing date written on the seal(s).
 Relinquished by (Sealer) Date Time (24 hr clk) Received by Date Time (24 hr clk)
 CNC 3/16/99 14:45 UPS 3/16/99 14:45
 To Sealed Container for Shipment

Laboratory Custodian: I certify that I received the container holding the above sample(s) with the seal integrity as indicated above and the sealer's initials and the date written on the seal(s). After being received, this/these same sample(s) will be retained by laboratory personnel at all times or locked in a secured area.
 Printed Name, Signature, and Initials [07] Date [05] Time [06] (24 hr clk) Supervisor releasing results (signature): Date:

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

SAMPLE NUMBER : B903273

SAMPLING POINT DESC. : MITCHELL LONG LAKE, MADISON CNTY

SUBMITTING SOURCE # : 1190000000

SITE # : X201

DATE COLLECTED : 990315

TIME COLLECTED : 1110

SAMPLING PROGRAM :

COLLECTED BY : CNC

DELIVERED BY : UPS

COMMENTS :

FUNDING CODE : LP41

AGENCY ROUTING : 00

UNIT CODE :

SAM TYPE CODE :

SAMPLE PURPOSE CODE : F REPORTING INDICATOR : B

DATE RECEIVED : 990317

TIME RECEIVED : 0900

RECEIVED BY : LPD

LAB OBSERVATIONS :

TRIP BL SAM# :

SUPERVISORS INITIALS : SMM

NOTE : K = LESS THAN VALUE

A10000 PH/FINAL TCLP EXT UNITS : 4.8	P79693 PHENOLS,SW846	MG/KG : 0.51K
P79595 CYANIDE,SW84 D/WT MG/KG : 0.51K	P81951 CARBON,ORG(TOC)	MG/KG : 21000
P70318 SOLIDS,% WET SAMPL % : 98.54	P49134 MERCURY,TCLP SLD	MG/L : 0.001K
P99023 MERCURY,SW84 D/WT MG/KG : 0.10K	P49100 ANTIMONY,TCLP SLD	MG/L : .006K
P49099 ARSENIC,TCLP SLD MG/L : .010K	P49101 BARIUM,TCLP SLD	MG/L : 2.0
P49102 BERYLLIUM,TCLP SLD MG/L : .057	P49103 CADMIUM,TCLP SLD	MG/L : .270
P49105 CHROMIUM,TCLP SLD MG/L : .035	P49109 LEAD,TCLP SLD	MG/L : 14.
P49112 NICKEL,TCLP SLD MG/L : .610	P49114 SELENIUM,TCLP SLD	MG/L : .010K
P49115 SILVER,TCLP SLD MG/L : .005K	P49118 THALLIUM,TCLP SLD	MG/L : .010K
P49119 VANADIUM,TCLP SLD MG/L : .005K	P79581 CALCIUM,SW84 D/WT MG/KG : 19000	
P79650 MAGNESIUM,SW D/WT MG/KG : 6600	P79705 SODIUM,SW846 D/WT MG/KG : 510	
P00937 POTASSIUM,SW D/WT MG/KG : 1400	P97545 ALUMINUM,SW8 D/WT MG/KG : 11000	
P79547 ANTIMONY,SW8 D/WT MG/KG : 5.5K	P79548 ARSENIC,SW84 D/WT MG/KG : 9.2K	
P79550 BARIUM,SW846 D/WT MG/KG : 240	P78463 BORON,SW846 D/WT MG/KG : 51	
P79556 BERYLLIUM,SW D/WT MG/KG : 18	P79580 CADMIUM,SW84 D/WT MG/KG : 7.9	
P79591 CHROMIUM,SW8 D/WT MG/KG : 72	P79594 COPPER,SW846 D/WT MG/KG : 1600	
P79593 COBALT,SW846 D/WT MG/KG : 68	P79645 IRON,SW846 D/WT MG/KG : 120000	
P79649 LEAD,SW846 D/WT MG/KG : 2900	P79651 MANGANESE,SW D/WT MG/KG : 1400	
P79671 NICKEL,SW846 D/WT MG/KG : 370	P79703 SELENIUM,SW8 D/WT MG/KG : 9.2K	
P79704 SILVER,SW846 D/WT MG/KG : 4.6K	P79706 STRONTIUM,SW D/WT MG/KG : 45	
P79712 THALLIUM,SW8 D/WT MG/KG : 9.2K	P79722 VANADIUM,SW8 D/WT MG/KG : 32	
P79726 ZINC,SW846 D/WT MG/KG : 34000		

DISPOSITION DOCUMENT
FOR
HISTORICAL SLAG AT
CHEMETCO, INC.

October 2001

Chemetco, Inc.

1.0 Introduction

The purpose of this document is to facilitate the agreement between the parties on remedial alternatives for the slag present on site. While regulatory issues are discussed, the focus of this document is to compile existing environmental information and to outline potential remedies.

The Chemetco facility was constructed in 1969 and commenced production of anode copper, cathode copper, crude lead-tin solder, zinc oxide and slag in 1970. The Chemetco facility is located directly within an agricultural area within a larger industrial corridor along Route 3. The facility is bounded on the west by a major, heavily traveled rail and highway routes and on the south by a limited use secondary road. Chemetco's operations are conducted on an approximately 40 acre secured area within the approximately 240-acre site. The acreage is located in the Southeast $\frac{1}{4}$, Section 16, Township 4 North, Range 9 West of the Third Principal Meridian, in Madison County.

2.0 Background on Slag

Chemetco generates an iron-silicate slag. Historical slag on-site consists of approximately 300,000 cubic yards. The cooled slag is a hard, dense and inert material produced in the secondary copper smelting process. As explained below, Chemetco in 1987 changed its method of handling the molten slag, thus changing the physical characteristics (primarily size) of the solidified material.

Prior to 1987, molten slag was produced in and poured from the top blown rotary converters (TBRC), or furnaces, into a slag pot that was then hauled from the production area to slag cooling pits on the southern face of the present slag pile. The molten material was poured from the Kress slag hauler into one of the four cooling pits whereupon it slowly cooled and solidified. The solidified slag was then broken up as necessary and added to the slag pile. This process produced what has been called "chunky slag". Chunky slag varies in size from sand grains to as much as four inches across or larger.

Beginning in September 1987, Chemetco initiated a modified process which features rapid cooling of molten slag by pouring a narrow stream of molten slag into a high pressure, ambient temperature water spray to produce granulated slag. The granulated slag is run through the Granulated Slag Screening Plant and shipped out for use as granules on asphalt shingles.

2.1 Generation

Prior to March 29, 1991, the slag produced by Chemetco was not a characteristic hazardous waste. EP toxicity results for Chemetco slag were statistically less than the characteristic regulatory standards. Slag produced by Chemetco prior to March 29, 1991 never had the designation of "RCRA hazardous waste." Markets for Chemetco slag include shingle manufacturing, cement production, concrete aggregate, and use as road base material.

Slag generated after March 29, 1991 has been analyzed using the TCLP method. Lead and cadmium levels in the slag exceed the TC regulatory levels. Thus if the slag generated after March 29, 1991 is to be disposed, it must be disposed as a RCRA hazardous waste. If the slag is recycled, it does not meet the definition of hazardous waste. The parties disagree regarding what acts constitute disposal in this context.

Given the usage and placement history of the slag at the Site, it is estimated that greater than 90% of the slag in the pile is pre-March 1991 slag.

2.2. Composition

In the past several years the historical slag has been subjected to leach testing using three (3) different tests; TCLP, SPLP, and distilled water. This section will summarize the data from the tests.

SPLP and TCLP

USEPA was on-site in May of 1998 to collect samples of various materials and wastes at Chemetco. The facility split samples for a few of the materials. The split samples of slag taken during the May 1998 USEPA sampling event were analyzed by Chemetco utilizing the SPLP method. The analytical results supplied by USEPA for the TCLP analysis and the corresponding SPLP analytical results are included below in Table 2-1.

**Table 2-1
Comparison of TCLP/SPLP Results of Slag**

Sample No.	Pb TCLP (mg/L)	Pb SPLP (mg/L)
SL-001	18.4	0.894
SL-002	16.6	1.04
SL-003	11.8	0.550
SL-004	15.4	2.28
SL-005	20.5	1.59
SL-006	39.2	1.39
SL-007	56.6	1.62
SL-008	14.6	1.51
SL-009	79.9	2.07
SL-010	27.7	1.18
SL-011	54.4	1.61
SL-012	17.2	0.556
SL-013	43.9	1.88

SL-014	50.6	1.45
SL-015	56.0	1.19
SL-016	21.0	0.440
SL-017	38.2	1.25
SL-018	67.7	3.01
SL-019	37.8	0.869
SL-020	17.0	0.751

(It should be noted that a majority of the 20 samples were of the finer fraction of the slag residing in the pile in the northeast corner of the facility. Chemetco contends the samples are not representative of the slag pile as a whole.)

The orders of magnitude of difference between TCLP and SPLP analytical data led Chemetco to perform additional testing on slag as described below.

Statistical comparisons of lead determination using TCLP and SPLP, in combination with the chemical assay techniques identified as Method 200.8 and Method 6010, analyses were conducted. Those comparisons are supported by the use of an appropriately statistically designed sampling plan.

The statistical design required the collection of three slag samples from a road surface. The object of the investigation was to determine the effect of slag sample leaching and assay procedures on the resulting concentration of leachable lead. Therefore, these samples were taken from convenient road surface locations. Reasonable care was exercised to obtain samples of the slag used in road construction and avoid other road construction material.

The collected sample containing "large" pieces of slag were comminuted with a hammer to reduce any "chunks" to a size amenable to hand mixing. The comminuted sample material was then mixed as well as possible by hand and four roughly equal size aliquots extracted. Each aliquot weighed at least 100 grams to permit application of the appropriate leach extraction procedure.

Each aliquot was assigned a combination of leaching and lead assay procedure as indicated in the following table (Table 2-2). The assignment of each aliquot to procedure combination was performed at random. The resulting statistical design is referred to as "two factor factorial in randomized complete blocks." The "blocks" are the three physical samples collected from the road.

Table 2-2
Sample Aliquot Procedure Assignment

Combination	Leach Procedure	Assay Procedure
A	Method 1311	Method 6010
B	Method 1311	Method 200.8
C	Method 1312	Method 6010
D	Method 1312	Method 200.8

Although it was not a part of the initial design, the laboratory performed replicate assays for six of the submitted samples. All replicates were for assay Method 200.8, with three being associated with each leaching technique. This provided an unanticipated estimate of the variation associated with the assay method. Comparing this estimate to the "experimental error" from the resulting Analysis of Variance (ANOVA) revealed that the experimental error was not significantly different from the variation associated with the assay technique. Analytical data is included in Table 2-3

Table 2-3
Analytical Data From Slag Road

Sample ID	TCLP Pb 200.8	TCLP Pb 6010B	SPLP Pb 200.8	SPLP Pb 6010B
01-110899 ¹	19.4	19.5		
04-110899 ¹			0.311	
07-110899 ¹			1.20	1.10
10-110899 ¹	21.6			
02-110899 ²	5.04	4.60		
05-110899 ²			0.961	0.890
08-110899 ²			0.822	
11-110899 ²	5.02			
03-110899 ³	13.6			
06-110899 ³			0.573	
09-110899 ³			0.593	0.570
12-110899 ³	19.2	20.3		

¹Sample location 1

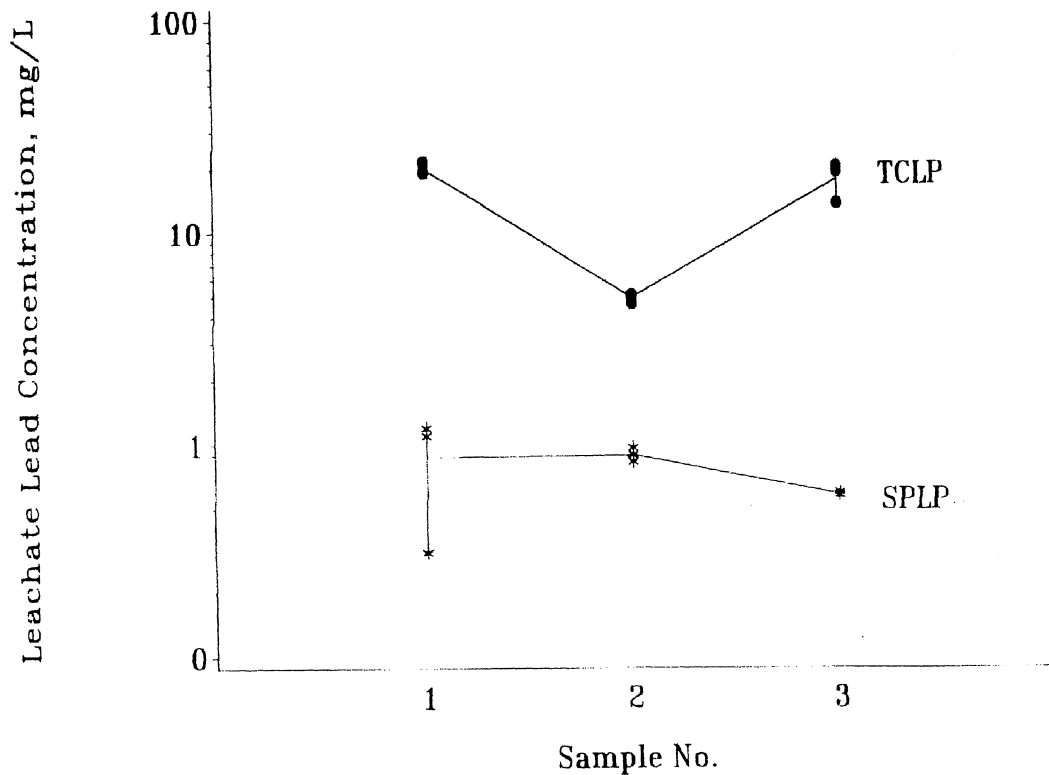
²Sample location 2

³Sample location 3

Statistical analysis of the data using ANOVA of the resulting data indicated that only the different leaching procedures produced statistically significant differences in lead concentration. This statistical significance is illustrated in the Figure 2-1. Note that a logarithmic scale is employed on the vertical axis of this figure. Thus, the differences between using the TCLP and SPLP procedures are order of magnitude differences in leachate lead concentration. The variation due to other sources is illustrated in this figure as Hi-Lo plots about the sample-leach procedure mean.

Figure 2-1
Statistical Significance of leach Method

*Effect Of Sample Leaching Method
On Leachate Lead Concentration
Farm Road Slag Samples*



Because leaching Fluid 1 was used for each of the leaching techniques, the pH of the fluids used is fairly constant (TCLP, 4.9 and SPLP, 4.2). Logically, one is lead to attribute the differences to the type of acid used for leaching, the organic acid used for TCLP versus the inorganic acid used for SPLP. Chemetco intends to propose remedial alternatives for the slag that eliminates the prospect that the slag would ever be placed in an untreated or unaltered condition where it would commingle with municipal waste. Thus, the SPLP procedure becomes available to the Parties in making remedial decisions.

Distilled Water

Slag has been shown to produce a buffering effect in some cases such and during an evaluation of the slag for construction projects in the late 1980's, long term testing was conducted on eleven samples, each sample lasting 28 to 30 days during which distilled water was circulated continuously through 55-gallon polyethylene drums of slag material.

In order to obtain samples for testing Chemetco excavated representative material from slag storage pile and placed the samples in new 55-gallon drums. Each drum and its contents had an average total weight of approximately 850 pounds.

Each drum was then transported to the sample preparation area. The contents of each drum were screened for separation into the following five size fractions: greater than 3"; less than 3" but greater than 1 1/2"; less than 1 1/2" but greater than 3/4"; less than 3/4" but greater than 3/8"; and less than 3/8". After separation into size fractions through screening, each resulting size fraction was weighed, and this weight was recorded.

From the contents of each drum a 100 pound representative sample was prepared by blending material from each of the size fractions in the same proportion as existed in the full drum sample. Each resulting 100-pound sample was placed in a large polyethylene bag, sealed and transported to the laboratory.

At the laboratory, three samples were initially selected for testing. Each sample was emptied into a clean 55-gallon polyethylene drum. Forty-five gallons of distilled water was added to each drum, and the drum was covered with a polyethylene drum cover. Distilled water was circulated continuously through he drums at an average rate of 2-1/2 gallons per minute. At 7-day intervals a sample of the liquid was drawn for analysis for lead and cadmium. The total testing period for each sample lasted 28 days. The results of the test are shown in Attachment 1.

After the first three samples were tested, the procedure was modified. In the modified procedure, liquid samples were taken each hour of the first 10 hours and then once each day for the next nine days. Further liquid samples were taken 10 and 20 days later. Testing of additional samples conducted following modification of the sampling procedure. In addition to analyzing liquid samples for lead and cadmium, the modified procedure included recording pH and temperature levels. The results of the later testing are also shown in Attachment 1. The distilled water leaching tests continued for a total of 58 days- 28 for the first phase and 30 for the second.

110071B

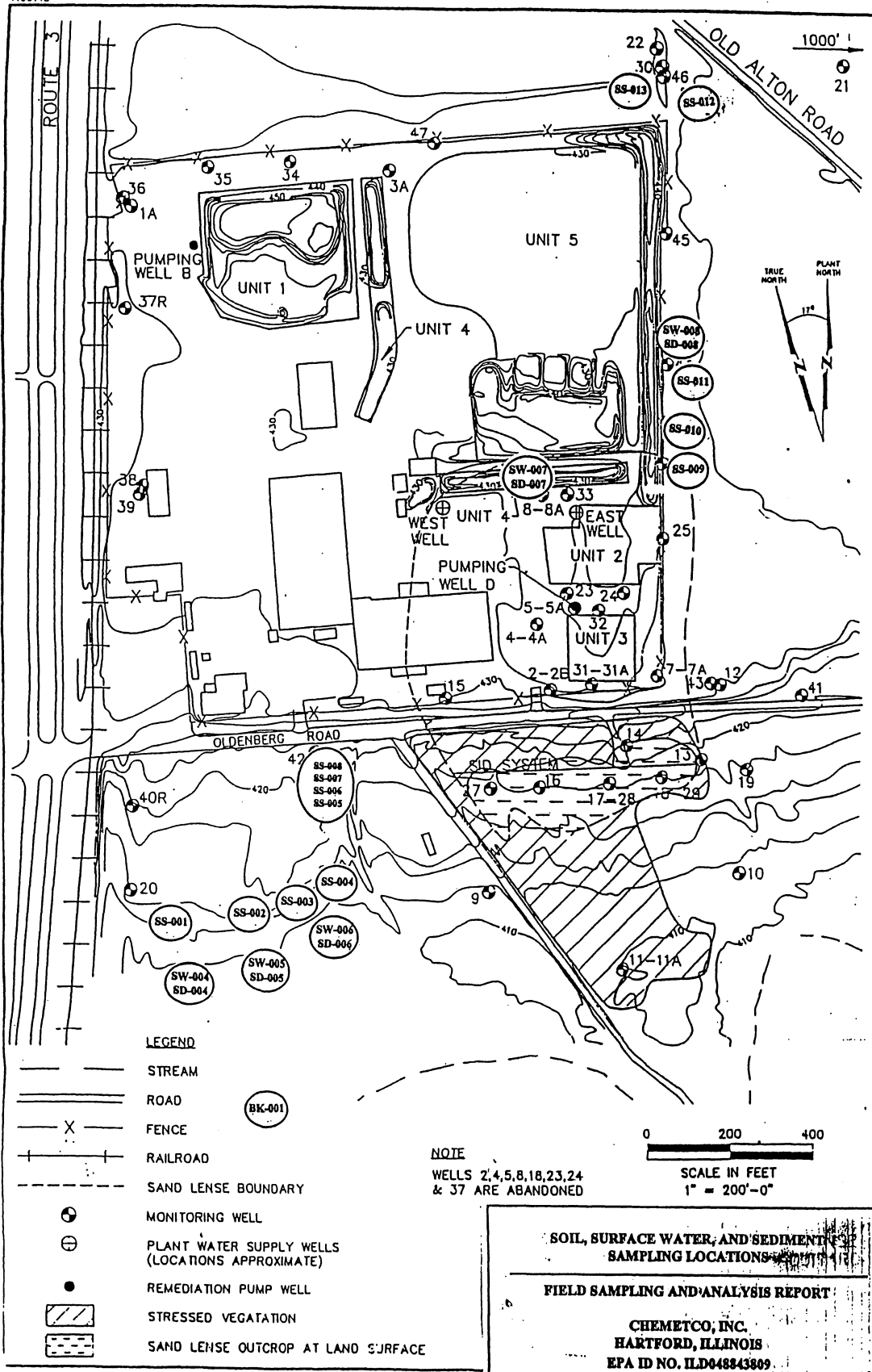


Table 3-3 Long Term Water Leach Test Results

CHEMETCO INC
HARTFORD, IL

SLAG / DISTILLED WATER LEACH TEST

DATE	TIME INTERVAL	TIME UNIT	LEAD (PPM)	CADMIUM (PPM)	TEMP (°C)	PH
=====						
SAMPLE NO. 12						
OCT13	7	DAY	0.522	0.083		
	14	DAY	0.587	0.084		
	21	DAY	0.341	0.081		
	28	DAY	0.242	0.012		
	AVERAGE		0.423	0.065		
	DEVIATION		0.138005	0.030618		
SAMPLE NO. 3						
OCT13	7	DAY	0.01	0.005		
	14	DAY	0.01	0.005		
	21	DAY	0.611	0.126		6.01
	28	DAY	0.284	0.005		6.29
	AVERAGE		0.22875	0.03525		
	DEVIATION		0.247422	0.052394		
SAMPLE NO. 18						
OCT13	7	DAY	0.229	0.025		
	14	DAY	0.602	0.022		
	21	DAY	0.848	0.021		7.28
	28	DAY	0.847	0.005		7.29
	AVERAGE		0.6315	0.01825		
	DEVIATION		0.253075	0.007790		
SAMPLE NO. 1						
NOV19	915	HOUR	0.467	0.779	18	7.1
	1015	HOUR	0.482	0.09	18	7.05
	1115	HOUR	0.382	0.061	18	7.1
	1215	HOUR	0.226	0.206	18.5	7
	1315	HOUR	0.938	0.09	19	7.1
	1415	HOUR	0.579	0.285	20	7
	1515	HOUR	0.374	0.005	20	7.05
	1615	HOUR	0.331	0.119	20	7.1
	1715	HOUR	0.656	0.072	21	7.05
	1815	HOUR	0.396	0.054	21	7.15
	1915	HOUR	0.334	0.054	22	7.1
NOV20	915	HOUR	1	0.005	24.5	7.8
NOV21	915	HOUR	0.369	0.11	26	7.1
NOV22	915	HOUR	0.204	0.143	20	7.85
NOV23	915	HOUR	0.126	0.131	23	8.25
NOV24	915	HOUR	0.151	0.046	24.75	7.15
NOV25	915	HOUR	0.444	0.107	24.5	7.15
NOV26	915	HOUR	0.285	0.052	23.4	7.15
NOV27	915	HOUR	0.574	0.008	23.5	6.8

Table 3-3 (cont'd)

NOV28	915	HOUR	0.244	0.111	23.5	7.15
DEC08	920	HOUR	0.805	0.077	31	7.25
DEC18	915	HOUR	0.128	0.079	29	7.3
	AVERAGE		0.431590	0.122		7.215909
	DEVIATION		0.239404	0.156486		

			SAMPLE	NO. 22		
	915	HOUR	0.105	0.005	18	7.8
NOV19	1015	HOUR	1.28	0.036	18.5	8.45
	1115	HOUR	2.32	0.005	18.5	8.35
	1215	HOUR	1.4	0.014	19.5	8.45
	1315	HOUR	3.96	0.182	20	8.55
	1415	HOUR	1.04	0.005	20	8.45
	1515	HOUR	3.97	0.049	21	8.5
	1615	HOUR	2.39	0.014	21	8.55
	1715	HOUR	1.47	0.005	21	8.55
	1815	HOUR	1.79	0.005	21	8.55
	1915	HOUR	1.95	0.012	21	8.65
NOV20	915	HOUR	1.52	0.005	27	8.65
NOV21	915	HOUR	1.23	0.11	29	9
NOV22	915	HOUR	0.522	0.02	22	10.15
NOV23	915	HOUR	0.452	0.005	25	9.7
NOV24	915	HOUR	0.484	0.098	25.75	9.55
NOV25	915	HOUR	0.551	0.028	25	9.53
NOV26	915	HOUR	0.808	0.011	22.5	9.75
NOV27	915	HOUR	0.911	0.048	24.5	9.45
NOV28	915	HOUR	0.432	0.087	24.5	9.35
DEC08	920	HOUR	1.01	0.092	21	8.35
DEC18	915	HOUR	0.313	0.027	24	8.05
	AVERAGE		1.359454	0.039227		8.835454
	DEVIATION		1.030498	0.045603		

			SAMPLE	NO. 30		
	915	HOUR	0.158	0.005	18	7.3
NOV19	1015	HOUR	0.222	0.047	18	7.5
	1115	HOUR	0.415	0.082	20	7.45
	1215	HOUR	0.545	0.037	20	7.55
	1315	HOUR	0.673	0.005	21	7.6
	1415	HOUR	0.548	0.072	21	7.75
	1515	HOUR	0.739	0.082	22	7.5
	1615	HOUR	0.7	0.091	22	8.35
	1715	HOUR	0.119	0.005	21	8.15
	1815	HOUR	0.54	0.024	21.5	8.35
	1915	HOUR	0.551	0.036	24	8.05
NOV20	915	HOUR	0.482	0.005	29	7.85
NOV21	915	HOUR	0.414	0.029	30	8.6
NOV22	915	HOUR	0.464	0.092	21	8.9
NOV23	915	HOUR	0.417	0.075	28	8.25
NOV24	915	HOUR	0.32	0.036	29.5	8.5
NOV25	915	HOUR	0.405	0.028	30	8.25
NOV26	915	HOUR	0.362	0.005	29	8.5
NOV27	915	HOUR	0.484	0.005	29	8.05
NOV28	915	HOUR	0.287	0.052	30.25	7.8

Table 3-3 (cont'd)

DEC08	920	HOUR	0.825	0.193	27	8.05
DEC18	915	HOUR	0.195	0.052	28	6.95
	AVERAGE		0.448409	0.048090		7.965909
	DEVIATION		0.183935	0.043327		

		SAMPLE	NO. 17		
JAN08	900	HOUR	0.914	0.081	18
	1000	HOUR	0.379	0.01	18
	1100	HOUR	0.335	0.005	18
	1200	HOUR	0.363	0.005	18
	1300	HOUR	0.322	0.044	18
	1400	HOUR	1.8	0.022	18
	1500	HOUR	0.714	0.022	20
	1600	HOUR	0.587	0.053	20
	1700	HOUR	0.288	0.005	20
	1800	HOUR	0.247	0.005	20
	1900	HOUR	0.461	0.005	20
JAN09	900	DAY	0.195	0.005	19
JAN10	900		0.249	0.032	26
JAN11			0.233	0.005	22
JAN12			0.432	0.07	29
JAN13			0.405	0.117	29.5
JAN14			0.507	0.005	30
JAN15			0.074	0.005	30
JAN16			0.45	0.005	28
JAN17			0.379	0.042	29
JAN18			0.339	0.005	30
JAN28			0.505	0.005	26
FEB08			0.444	0.005	23
	AVERAGE		0.461826	0.024260	
	DEVIATION		0.333150	0.029882	

		SAMPLE	NO. 8		
JAN08	900	HOUR	1.06	0.005	18
	1000	HOUR	2.73	0.076	18
	1100	HOUR	2.35	0.024	18
	1200	HOUR	2.09	0.005	18
	1300	HOUR	1.31	0.005	19
	1400	HOUR	1.55	0.005	19
	1500	HOUR	1.61	0.005	20
	1600	HOUR	0.04	0.005	20
	1700	HOUR	2.84	0.005	20
	1800	HOUR	1.25	0.052	20
	1900	HOUR	1.41	0.005	20
JAN09	900	DAY	1.19	0.005	19
JAN10			2.49	0.037	26
JAN11			1.99	0.005	24
JAN12			4.43	0.299	29
JAN13			1.09	0.005	29.5
JAN14			1.99	0.085	30
JAN15			1.78	0.005	30
JAN16					28
JAN17			0.974	0.023	29
JAN18			1.39	0.015	30

Table 3-3 (cont'd)

JAN28			1.5	0.013		
FEB08			0.583	0.005	25	6.65
	AVERAGE		1.711227	0.031590	24	7
	DEVIATION		0.888346	0.062717		9.758695
			SAMPLE	NO. 20		
JAN08	900	HOUR	1.27	0.191	18	9.4
	1000	HOUR	1.13	0.012	18	9.85
	1100	HOUR	1.2	0.005	18	10.05
	1200	HOUR	1.49	0.005	18	10.1
	1300	HOUR	1.14	0.052	19	10.05
	1400	HOUR	0.995	0.051	19	10.15
	1500	HOUR	0.302	0.005	19	10.05
	1600	HOUR	0.435	0.025	20	10.05
	1700	HOUR	0.447	0.005	20	10
	1800	HOUR	0.621	0.005	20	10.05
	1900	HOUR	0.605	0.027	20	10.05
JAN09		DAY	0.316	0.028	19	10.15
JAN10			0.414	0.005	26	10.1
JAN11			0.316	0.005	24	10.05
JAN12			0.522	0.005	29	9.95
JAN13			0.938	0.005	29.5	10.05
JAN14			0.397	0.005	30	10.05
JAN15			0.444	0.005	30	10.15
JAN16			0.112	0.042	28	10.25
JAN17			0.379	0.075	29	10.3
JAN18			0.302	0.005	30	10.6
JAN28			0.59	0.032	25	6.65
FEB08			0.621	0.047	21	6.85
	AVERAGE		0.651565	0.027913		9.780434
	DEVIATION		0.371037	0.040146		
			SAMPLE	NO. 16		
JAN21	800	HOUR	0.672	0.03	17	7.4
JAN21	900	HOUR	0.711	0.005	17	7.45
JAN21	1000	HOUR	0.45	0.098	18	7.5
JAN21	1100	HOUR	0.896	0.015	19	7.45
JAN21	1200	HOUR	1.83	0.005	19	7.5
JAN21	1300	HOUR	0.461	0.005	19	8.35
JAN21	1400	HOUR	0.562	0.012	18	8.75
JAN21	1500	HOUR	0.656	0.005	18	8.85
JAN21	1600	HOUR	0.552	0.04	18	8.9
JAN21	1700	HOUR	0.708	0.112	19	8.7
JAN21	1800	HOUR	0.593	0.005	20	8.5
JAN22		DAY	1.26	0.03	29	8
JAN23		DAY	0.724	0.005	24	7.85
JAN24		DAY	0.476	0.032	29	7.55
JAN25		DAY	1.49	0.005	20	7.6
JAN26		DAY	0.593	0.047	24	7.5
JAN27		DAY	0.549	0.058	19	7.55
JAN28		DAY				
JAN29		DAY				
JAN30		DAY	0.432	0.06	22	6.7
FEB07		DAY	0.42	0.049	21	6.75
FEB17		DAY	0.924	0.005	22	7.8
	AVERAGE		0.74795	0.03115		7.8325

Table 3-3 (cont'd)

DEVIATION		0.365195 0.031071			
		SAMPLE NO. 2			
JAN21	800	HOUR	0.297	0.042	17 7.85
JAN21	900	HOUR	0.914	0.005	17 7.85
JAN21	1000	HOUR	0.01	0.005	18 8.35
JAN21	1100	HOUR	0.184	0.005	19 8.4
JAN21	1200	HOUR	0.203	0.005	19 8.7
JAN21	1300	HOUR	0.97	0.055	18 8.8
JAN21	1400	HOUR	0.522	0.064	18 8.9
JAN21	1500	HOUR	0.328	0.115	18 8.9
JAN21	1600	HOUR	0.447	0.017	17 8.5
JAN21	1700	HOUR	0.774	0.067	18 8.1
JAN21	1800	HOUR	0.095	0.005	19 8.05
JAN22		DAY	0.227	0.005	26 7.9
JAN23		DAY	0.342	0.005	22 7.8
JAN24		DAY	0.54	0.005	25 7.65
JAN25		DAY	0.214	0.095	20 7.55
JAN26		DAY	0.336	0.039	23 7.55
JAN27		DAY	0.01	0.051	24 7.6
JAN28		DAY			
JAN29		DAY			
JAN30		DAY	1.29	0.005	26 6.7
FEB07		DAY	0.977	0.063	22 7.25
FEB17		DAY	1.51	0.005	20 7.45
AVERAGE			0.5095	0.0329	7.9925
DEVIATION			0.415539	0.033619	

17 July 2002

FACT JUSTIFICATION FOR SALE OF AIR-COOLED IRON/SILICATE SLAG AT FORMER CHEMETCO PLANT

Introduction

The former Chemetco, Inc. constructed a secondary copper smelter south of Hartford, IL in 1970. The company declared Chapter 7 bankruptcy on 31 October 2001 and the plant assets, debts and some environmental legacies passed to the creditors and the bankruptcy Trustee. The company was a major producer of recycled copper and crude tin/lead solder from low-grade scrap materials. The company also produced two industrial by-products--a zinc oxide rich sludge from the air cleaning scrubbers and bag-houses and an iron/silicate slag. At first, it appears that the company made little effort to sell the scrubber sludge, containing zinc, copper, lead and tin and the iron/silicate slag, which contains minor amounts of copper oxides, copper metal, lead carbonate hydroxide, tin oxide and other trace metals. In the 1980's the company made an effort to sell these smelting by-products, with some success. Iron/silicate slag was crushed for railroad ballast, concrete aggregate and as a "sandwich" between tar and chips on local roads to reduce frost heave and to lower operation and maintenance cost. The slag was also utilized by the Illinois Department of Transportation as a base for bridge abutments and slope stability. But, Chemetco also produced more than they sold.

When EPA regulations required the by-products to be tested for potential leaching of hazardous metals (such as lead), the by-products passed the EP Tox leaching test until EPA introduced the Toxicity Characteristic Leaching Procedure (TCLP) in 1991. The TCLP procedure is important in sanitary landfills, for leaching of municipal garbage, as the dominant leaching agent is acetic acid, an organic acid, which is produced within the landfill. Iron/silicate slag contains no carbon content and the Trustee's processing contractor and the buyer are not planning to mix the slag with organic trash. TCLP test was important to determine the potential for leachate, from the garbage, much of which is organic material, to pollute the groundwater resource. The iron/silicate slag failed the TCLP test for lead and on a few occasions, cadmium. EPA noted that the pre-1987 air-cooled ("chunky") slag (1,000,000+- tons) exhibited hazardous leaching potential for lead and sometimes cadmium metals and the pre-1987 slag was speculatively accumulated and thus discouraged the selling of the material.

In the early 1990's the company found a market for the slag for roofing shingles. They changed their means of dealing with the by-product slag as it was moved from the furnaces. Company staff poured the hot fluid slag into a high-pressure water spray that quick cooled the material. This produced a more easily crushable product, which was glassy with fines (called a frit). The material was crushed, dried and screened for correct particle size (See Appendix A). The iron/silicate slag, with copper oxide as a minor constituent, was sold for roofing shingle backing (the heavy slag, encapsulated in asphalt on the back of the shingle). The slag reduced wind lifting and the minor amounts of

3-2

Rain Leach Tests

CHEMETCO INC
SLAG
SIMULATED "ACID RAIN" LEACH TEST

DESIG- NATION	T=6HR		T=7HR		T=8HR		T=9HR		T=10HR		T = 54HR		DESIG- NATION
	PH	TEMP	PH	TEMP	PH	TEMP	PH	TEMP	PH	TEMP	LEAD	CHROMIUM	
118	15	16	4.4	16.5	3.6	16.5	3.7	17	4.38	16	4	0	118
128	65	16.5	4	16.5	3.5	15	3.55	17	3.64	17	2.63	0.015	128
138	75	16	9.45	17	10.45	17	10.25	17	10.3	17	0.288	0.063	138
148	35	16	9.2	17	10.1	17	9.98	17	10.04	17	0.18	0	148
158	25	16	9.15	16.5	10	17	9.9	16.5	11.49	17	0.277	0.025	158
168	35	16	9.25	16.5	10.3	16.5	10.2	16.5	10.51	17	0.235	0.037	168
178	4	15.5	9.35	16.5	10.45	16.5	10.35	17	10.42	17	0.205	0.099	178
188	55	16	9.55	16.5	10.9	17	10.85	17	10.85	17	0.058	0.032	188
218	85	16.5	5.2	16.5	4.7	17	5.2	17	5	17	1.46	0	218
228	9	16	4.7	16.5	4.46	16.5	4.6	16.5	5.05	17	1.84	0.02	228
238	45	16	6.05	16.5	6.95	17	6.9	16.5	6.59	17	0.381	0.021	238
248	1	16	6.8	16.5	8.65	17	8.5	17	8.18	17	0.332	0.013	248
258	2	16.5	7.7	16.5	9.4	16.5	8.97	16.5	8.8	17	0.373	0	258
268	4	16	8.1	16.5	9.15	16.5	9.05	16.5	8.92	17	0.355	0	268
278	15	16	8.25	16.5	9.2	17	9.1	17	9.04	17	0.376	0.113	278
288	35	16.5	8.35	17	9.35	17	9.4	17	9.34	17.5	0.326	0	288
318	15	16.5	4.4	17	4.15	17	4.22	17	4.2	17	1.3	0.041	318
328	15	16.5	3.9	17	4	17	3.7	17	3.6	17	2.09	0.073	328
338	15	16.5	5.65	17	7	17	6.6	17	6.87	17	0.555	0	338
348	5	16.5	6.35	17	8.7	17	8.51	17.5	8.4	17.5	0.194	0	348
358	5	15	7.55	15.5	8.9	15	8.8	15.5	8.8	15	0.744	0.005	358
368	5	15	8.15	15	9.15	15	9.2	15	9.2	15	1.35	0.005	368
378	3	15	8.2	15	9.05	15	9.05	25.5	9.05	15.5	2.25	0.051	378
388	4	15	8.25	15.5	9.15	15.5	9.1	15.5	9.1	16	1.83	0	388
418	5	16	4.3	16	4.15	16	4	16.5	4.3	16.5	9.26	0.065	418
428	8	15.5	3.65	16	3.5	16	3.5	16.5	3.5	16	5.69	0.032	428
438	5	15.5	5.75	15.5	6.3	16	6.4	16	6.35	16	0.36	0.091	438
448	5	15.5	6.2	16	8.2	16	8.4	16	8.8	16	0	0.005	448
458	5	15	7.15	15.5	8.5	15.5	8.7	16	9	15.5	0	0.005	458
468	5	15	7.85	15.5	9	16	9.05	15.5	9.25	16	1.91	0.081	468
478													478
488													488
518	1	15	7.9	15	8.2	15.5	7.75	15.5	8.4	15.5	0	0	518
528	1	15	3.65	15.5	3.55	15.5	3.45	15.5	3.5	15.5	3.84	0.73	528
538	1	16	4.4	16	4.6	16	4.75	16	5	16	0	0.025	538
548	1	14.5	5.75	15	8.35	15	8.25	15	8.2	15	0	0.25	548
558	1	15.5	6.25	16	8.5	16	8.4	16	8.75	16	0	0.005	558
568	1	14.5	6.8	15	8.35	15	8.35	15	8.4	15	0	0.081	568
578	1	15	7.05	15.5	8.35	15.5	8.35	15.5	8.4	15	0	0.078	578
588	1	15	7.25	15.5	8.5	15	8.5	15.5	8.65	15	0	0.045	588

TAKEN AFTER T=10HR



298164

L119 801 0003
CHEMETCO
ILD 048 843 809
Superfund/HRS
Sept 2002

CERCLA

Expanded Site Inspection



Illinois Environmental
Protection Agency

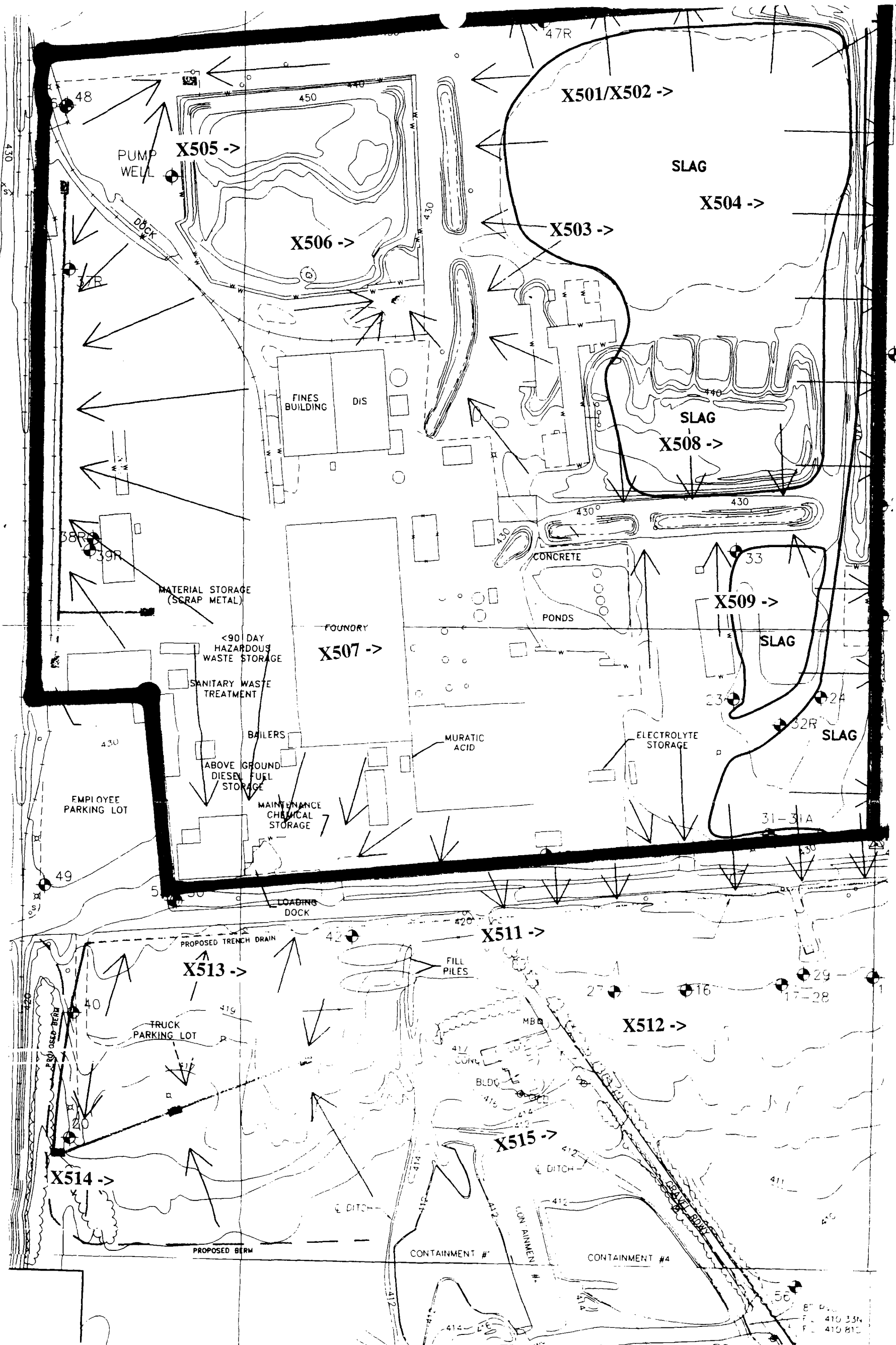


Figure 3

Site Map and On-Site Sample Locations

Appendix B

Tables

Table 1

Chemetco Facility Soil/Waste Sample Analytical Results

	X101	X501	X502	X503	X504	X505	X506	X507	X508	X509	X511	X512	X513	X514	X515
	background														
ALUMINUM	6860	16100	14900	15600	16500	8920	9040	3300	9090	5110	8670	6880	8410	5760	16900
ANTIMONY	1.3 UJ	1 R	1 R	0.99 R	0.96 R	4.6 J	578 J	1450 J	0.99 R	1.1 R	3.8 J	1.5 J	0.99 R	38.6 J	1.1 R
ARSENIC	4.8	2.7 J	2.2 J	1.6 J	0.77 UJ	188 J	242 J	110 J	4.6 J	6.9 J	11.6	11.8	14 J	14.4 J	7.1 J
BARIUM	107	983	906	905	1040	777	993	403	403	390	275	221	539	439	395
BERYLLIUM	0.44	57.3 J	54.1 J	90.9 J	110 J	39 J	25.2 J	5 J	60.4 J	33.1 J	1.3	1.2	18.9 J	11.8 J	38.9 J
CADMIUM	0.37	62.7 J	66.1 J	7.9 J	3.8 J	793 J	2970 J	180 J	18.6 J	23.4 J	11.3	4.9	63.6 J	134 J	63.9 J
CALCIUM	6770	11300	10600	9440	9430	15700	16500	4440	13400	11700	3990	3240	59500	50700	51700
CHROMIUM	11.6	122	99.6	170	188	54.5	64.8	27.6	136	62.1	13.3	10.2	57.4	36.3	85.6
COBALT	6.9	200	186	203	142	70.1	45	31.4	132	116	12.4	18	42.1	37.6	84.1
COPPER	13.3	8610 J	6160 J	5900 J	3870 J	27900	97700 J	192000 J	5450 J	6630 J	1780	1750	28500	31800	6740 J
IRON	13200	273000	256000	264000	247000	68900	22000	31900	196000	152000	13200	12600	74900	51000	140000
LEAD	18.3 J	16300	15400	9810 J	7800 J	29400	152000	116000 J	6790 J	7940 J	454 J	486 J	6220 J	M	11400 J
MAGNESIUM	3440	4630	3570	3660	3540	4780	2600	1010	6550	4220	3790	2340	4850	5850	10500
MANGANESE	741	2880 J	2740 J	2330 J	2490 J	1480	821	466	2140 J	1960	861 J	969 J	1010	790	2140
MERCURY	0.07 U	0.05 U	0.05 U	0.05 U	0.05 U	2.7	26.6	0.35	0.06	0.11	0.08	0.07	0.43	0.29	0.13
NICKEL	14.9	846	690	609	410	966	5000 J	5820 J	451	587	952	598	693	298	793
POTASSIUM	920	1280	1270	1120	1130	863	548	310	787	955	1260	1140	1080	797	1610
SELENIUM	1.3 U	1 U	1 U	0.99 U	0.96 U	12.8 J	32.6 J	3.4 J	0.99 U	2.3 J	1.3 U	1.2 U	1.5 J	1.1 U	1.4 J
SILVER	0.26 U	0.2 UJ	0.2 UJ	0.2 UJ	0.19 UJ	17.7 J	62.1 J	49.5 J	0.2 UJ	0.21 UJ	1.2	0.23 U	3.2 J	20.8 J	0.21 UJ
SODIUM	356 J	7060 J	6970 J	6660 J	5830 J	1200	8880 J	2950 J	3030 J	2390 J	5280 J	365 J	1660	1430	2180 J
THALLIUM	1.6	8.7	7.1	10.5	11.9	1.1 U	3.8	0.96 U	11.2	13.5	1.5	1.2 U	2.4	1.7	5.4
VANADIUM	17.7	12.5	10.7	13.2	15.1	18.7	15	2.4	9	4	22.4	22.9	14.2	13.5	33.1
ZINC	65	78500	72900	73100	71000	79100	217000 J	17200	62000	63200	1320	842	26400	26800	34500
CYANIDE	0.26	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.24 J	0.21 UJ	1.3 J	0.1 UJ	0.11 UJ	0.29	0.33	0.49 J	0.87 J	0.52 J

All results shown in parts per million.

Numbers shown in red exceed three-times background levels.

DATE: May 13, 2002

IEPA
1021 North Grand Avenue East
P.O. Box 19276
Springfield, IL 62794-9276

Attn: Bob Casper

SITE NAME: Chemetco

CASE NO.	LAB	NO. OF SAMPLES	SDG	MATRIX
30394	AATS	12	ME00S1	Soil

=====

Upon receipt of data, please check each package for completeness and note any missing deliverables below.

Send this form back to Sylvia Griffin, Data Management Coordinator after filling in the blanks below.

Data Received by: _____ Date: _____

PROBLEMS:

Please indicate if data is complete, and note if there are any deliverables missing from the cases noted above.

Received by Data Management Coordinator, CRL for file.

Date: _____

Signature: _____

FROM: U.S. EPA
Region V
Central Regional Laboratory
536 S. Clark, 10th Floor
Chicago, IL 60605

Sent By: Eva M. Dixon, Sr. Data Specialist
ESAT

RECEIVED
MAY 16 2002
EPA-EOL-FSRS

MAY 13 2002

Page 1 of 8

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

DATE: May 13, 2002

SUBJECT: Review of Data
Received for Review on May 9, 2002

FROM: Stephen L. Ostrodka, Chief (SMF-4J)
Superfund Field Services Section

TO: Data User: IEPA

The data in this case has not been validated.
We have compiled the CADRE files into a narrative format for the following case:

SITE NAME: Chemetco

CASE NUMBER: 30394 SDG NUMBER: ME00S1

Number and Type of Samples: 12 soils

Sample Numbers: ME00S1-9; ME00T0-2

Laboratory: AATS Hrs. for Review: 2

Following are our findings:

C: Cecilia Moore
Region 5 TPO
Mail Code: SM-5J

RECEIVED
MAY 16 2002
EPA-EOL-FSRS

Case Number : 30394
Site Name: Chemetco

Page 2 of 8
SDG Number: ME00S1
Laboratory: AATS

Below is a summary of the out-of-control audits and the possible effects of the data for this case:

NUMBER (##) MATRIX samples numbered ##, were collected on DATE. The lab received the samples on DATE in good condition. All samples were analyzed for metals and cyanide. All samples were analyzed using CLP SOW ILM04.1 analysis procedures.

Mercury analysis was performed using a Cold Vapor AA Technique. Cyanide analysis was performed using the MIDI Distillation procedure. The remaining inorganic analyses were performed using an Inductively Coupled Plasma-Atomic Emission Spectrometric procedure.

Assembled By: ESAT
Date: May 13, 2002

Case Number : 30394
Site Name: Chemetco

1. HOLDING TIME:

Holding Time Report

SDG NO: ME00S1

HOLDING TIME CRITERIA

Inorganic

	-- Holding Time --		pH	
	Primary	Expanded	Primary	Expanded
Metals	180	0	2.0	0.0
Mercury	28	0	2.0	0.0
Cyanide	14	0	12.0	0.0

DC-230: The following inorganic soil samples were reviewed for holding time violations using criteria developed for water samples.

ME00S1, ME00S2, ME00S3, ME00S4, ME00S5, ME00S6
ME00S7, ME00S8, ME00S9, ME00T0, ME00T1, ME00T2
ME00T2D, ME00T2S

2. CALIBRATIONS:

Calibration Report

SDG NO: ME00S1

CALIBRATION CRITERIA

Inorganic

Percent Recovery Limits

	--- Primary ---		-- Expanded --	
	Low	High	Low	High
Cyanide	85.00	115.00	70.00	130.00
AA	90.00	110.00	75.00	125.00
ICP	90.00	110.00	75.00	125.00
Mercury	80.00	120.00	65.00	135.00

No problems found for this qualification.

CRDL Standards Report

Assembled By: ESAT
Date: May 13, 2002

Case Number : 30394
 Site Name: Chemetco

SDG Number: ME00S1
 Laboratory: AATS

SDC NO: ME00S1

DC-373: The following inorganic samples are associated with a CRDL standard with low percent recovery.

Selenium

ME00S1, ME00S2, ME00S3, ME00S4, ME00S5, ME00S6
 ME00S7, ME00S8, ME00S9, ME00T0, ME00T1, ME00T2

Thallium

ME00T2

DC-374: The following inorganic samples are associated with a CRDL standard with high percent recovery.
 Hits and non-detects are flagged .

Arsenic

ME00S1, ME00S2, ME00S3, ME00S4, ME00S5, ME00S6
 ME00S7, ME00S8, ME00S9, ME00T0, ME00T1, ME00T2

Beryllium

ME00S1, ME00S2, ME00S3, ME00S4, ME00S5, ME00S6
 ME00S7, ME00S9, ME00T0, ME00T1, ME00T2, PBS03

Cobalt

ME00S1, ME00S2, ME00S3, ME00S4, ME00S5, ME00S6
 ME00S7, ME00S9, ME00T0, ME00T1, ME00T2, PBS03

Copper

ME00S1, ME00S2, ME00S3, ME00S4, ME00S5, ME00S6
 ME00S7, ME00S8, ME00S9, ME00T0, ME00T1, ME00T2
 PBS04

Lead

ME00S1, ME00S2, ME00S3, ME00S4, ME00S5, ME00S6
 ME00S7, ME00S8, ME00S9, ME00T0, ME00T1, ME00T2
 PBS03

Manganese

ME00S1, ME00S2, ME00S3, ME00S4, ME00S5, ME00S6
 ME00S7, ME00S9, ME00T0, ME00T1, ME00T2, PBS03

Nickel

ME00S1, ME00S2, ME00S3, ME00S4, ME00S5, ME00S6
 ME00S7, ME00S9, ME00T0, ME00T1, ME00T2, PBS03

Selenium

ME00T2

Thallium

ME00S1, ME00S2, ME00S3, ME00S4, ME00S5, ME00S6
 ME00S7, ME00S9, ME00T0, ME00T1, ME00T2, PBS03

Zinc

ME00S1, ME00S2, ME00S3, ME00S4, ME00S5, ME00S6
 ME00S7, ME00S8, ME00S9, ME00T0, ME00T1, ME00T2
 PBS03

3. BLANKS:

Assembled By: ESAT
 Date: May 13, 2002

Case Number : 30394
 Site Name: Chemetco

SDG Number: ME00S1
 Laboratory: AATS

Laboratory Blanks Report

SDG NO: ME00S1

LABORATORY BLANKS CRITERIA

DC-284: The following inorganic samples are associated with a blank concentration which is greater than the instrument detection limit (IDL). The sample concentration is also greater than the IDL and less than five times the blank concentration. Hits are qualified "J"; non-detects are not flagged.

Antimony
 ME00S8, ME00T2A

Copper
 ME00S9

Zinc
 ME00S9

Cyanide
 ME00S1, ME00S3, ME00S8

DC-338: During review of the following inorganic samples, the reported IDL/default CRDL value was used for cyanide.

ME00S1, ME00S2, ME00S3, ME00S4, ME00S5, ME00S6
 ME00S7, ME00S8, ME00S9, ME00T0, ME00T1, ME00T2
 ME00T2D, ME00T2S

4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE AND LAB CONTROL SAMPLE:

Matrix Spike Report

SDG NO: ME00S1

MATRIX SPIKE CRITERIA

Inorganic

Percent Recovery Limits

Upper	125.0
Lower	75.0
Extreme Lower	30.0

DC-266: The following inorganic samples are associated with a matrix spike recovery which was not within criteria and the required post digestion spike analysis was not performed. Hits and non-detects are not flagged. However, the information must be included in the IRDA report.

Assembled By: ESAT
 Date: May 13, 2002

se Number : 30394
te Name: Chemetco

Page 6 of 8
SDG Number: ME00S1
Laboratory: AATS

Cyanide

ME00S1, ME00S2, ME00S3, ME00S4, ME00S5, ME00S6
ME00S7, ME00S8, ME00S9, ME00T0, ME00T1, ME00T2
ME00T2D

DC-267: The following inorganic samples are associated with a matrix
spike recovery which is high (>125%)
Hits are qualified "J" and non-detects are not flagged.

Beryllium

ME00S1, ME00S2, ME00S3, ME00S4, ME00S5, ME00S6
ME00S7, ME00S8, ME00S9, ME00T0, ME00T1, ME00T2
ME00T2A, ME00T2D

Selenium

ME00S1, ME00S3, ME00S8, ME00S9, ME00T0, ME00T2
ME00T2A, ME00T2D

DC-268: The following inorganic samples are associated with a matrix
spike recovery which is low (30-74 %) indicating that sample
results may be biased low.
Hits are qualified "J" and non-detects are qualified "UJ".

Arsenic

ME00S1, ME00S2, ME00S3, ME00S4, ME00S5, ME00S6
ME00S7, ME00S8, ME00S9, ME00T0, ME00T1, ME00T2
ME00T2A, ME00T2D

Cadmium

ME00S1, ME00S2, ME00S3, ME00S4, ME00S5, ME00S6
ME00S7, ME00S8, ME00S9, ME00T0, ME00T1, ME00T2
ME00T2A, ME00T2D

Silver

ME00S1, ME00S2, ME00S3, ME00S4, ME00S5, ME00S6
ME00S7, ME00S8, ME00S9, ME00T0, ME00T1, ME00T2
ME00T2D

Cyanide

ME00S1, ME00S2, ME00S3, ME00S4, ME00S5, ME00S6
ME00S7, ME00S8, ME00S9, ME00T0, ME00T1, ME00T2
ME00T2D

DC-269: The following inorganic samples are associated with a matrix
spike recovery which is extremely low (<30 %) indicating that sa
mple results may be biased low.
Hits are qualified "J" and non-detects are qualified "R".

Antimony

ME00S1, ME00S2, ME00S3, ME00S4, ME00S5, ME00S6
ME00S7, ME00S8, ME00S9, ME00T0, ME00T1, ME00T2
ME00T2A, ME00T2D

LCS Report

SDG NO: ME00S1

to pr ms found for this qualification.

Assembled By: ESAT
Date: May 13, 2002

Case Number : 30394
Site Name: Chemetco

SDG Number: ME00S1
Laboratory: AATS

5. LABORATORY AND FIELD DUPLICATE

Duplicates Report

SIG NO: ME00S1

DC-257: The following inorganic samples are not qualified for
duplicates due to missing information.
Manual review of the data is required.

Lead
ME00S2

6. ICP ANALYSIS

ICS Report

SDG NO: ME00S1

DC-310: The following inorganic samples are associated with an ICS
analyte with low percent recovery (50-79%) .
Interferant concentration in the sample is comparable to that in
the ICS. Hits are qualified "J" and non-detects are qualified
"UJ".

Arsenic
ME00S1

DC-312: The following inorganic samples have elements other than Al, Ca,
Fe, and Mg at concentrations higher than 10 ppm that may cause
potential interference.
Hits are flagged "J" and non-detects are qualified "UJ".

Copper
ME00S3, ME00S4, ME00S5, ME00S6, ME00S7, ME00T0
ME00T1, ME00T2

Lead
ME00S1, ME00S3, ME00S6, ME00S7, ME00T0, ME00T1
ME00T2

Manganese
ME00S4, ME00S5, ME00S6, ME00S7, ME00T1

Nickel
ME00S9, ME00T0

Sodium
ME00S3, ME00S4, ME00S5, ME00S6, ME00S7, ME00S9
ME00T0, ME00T1, ME00T2

Assembled By: ESAT
Date: May 13, 2002

Case Number : 30394
Site Name: Chemetco

Page 8 of 8
SDG Number: ME00S1
Laboratory: AATS

Serial Dilution Report

SDG NO: ME00S1

No problems found for this qualification.

7. GFAA ANALYSIS

Furnace AA QC Report

SDG NO: ME00S1

No problems found for this qualification.

8. SAMPLE RESULTS

All data, except those qualified above, are acceptable.

Sample Result Verification Report

SDG NO: ME00S1

DC-336: The following inorganic samples have ICP determined results (for analytes usually determined by furnace AA) whose concentrations are below criteria. Professional judgement should be used to qualify the data.

Lead
ME00S2

Assembled By: ESAT
Date: May 13, 2002

CADRE Data Qualifier Sheet

Qualifiers Data Qualifier Definitions

U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J	The analyte was positively identified; the associated numerical value is an approximate concentration of the analyte in the sample.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the action limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
R	The data are unusable. (The compound may or may not be present)

Analytical Results (Qualified Data)

Page ____ of ____

Case #: 30394

SDG : ME00S1

Site :

CHEMECTO

Lab. :

AATS

Number of Soil Samples : 12

Number of Water Samples : 0

Reviewer

Date :

Sample Number :	ME00S1		ME00S2		ME00S3		ME00S4		ME00S5	
Sampling Location :	X513		X514		X515		X501		X502	
Matrix :	Soil		Soil		Soil		Soil		Soil	
Units :	mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Date Sampled :	04/16/2002		04/16/2002		04/16/2002		04/16/2002		04/16/2002	
Time Sampled :	11:50		11:30		11:40		12:50		12:50	
%Solids :	96.0		86.3		93.6		98.6		98.4	
Dilution Factor :	1.0		1.0		1.0		1.0		1.0	
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	8410		5760		16900		16100		14900	
ANTIMONY	0.99	R	38.6	J	1.1	R	1.0	R	1.0	R
ARSENIC	14.0	J	14.4	J	7.1	J	2.7	J	2.2	J
BARIUM	539		439		395		983		906	
BERYLLIUM	18.9	J	11.8	J	38.9	J	57.3	J	54.1	J
CADMIUM	63.6	J	134	J	63.9	J	62.7	J	66.1	J
CALCIUM	59500		50700		51700		11300		10600	
CHROMIUM	57.4		36.3		85.6		122		99.6	
COBALT	42.1		37.6		84.1		200		186	
COPPER	28500		31800		6740	J	8610	J	6160	J
IRON	74900		51000		140000		273000		256000	
LEAD	6220	J		M	11400	J	16300		15400	
MAGNESIUM	4850		5850		10500		4630		3570	
MANGANESE	1010		790		2140		2880	J	2740	J
MERCURY	0.43		0.29		0.13		0.050	U	0.050	U
NICKEL	693		298		793		846		690	
NISSIUM	1080		797		1610		1280		1270	
SELENIUM	1.5	J	1.1	U	1.4	J	1.0	U	1.0	U
SILVER	3.2	J	20.8	J	0.21	UU	0.20	UU	0.20	UU
SODIUM	1660		1430		2180	J	7060	J	6970	J
THALLIUM	2.4		1.7		5.4		8.7		7.1	
VANADIUM	14.2		13.5		33.1		12.5		10.7	
ZINC	26400		26800		34500		78500		72900	
CYANIDE	0.49	J	0.87	J	0.52	J	0.10	UU	0.10	UU

DISCLAIMER: This package has been electronically assessed as an added service to our customer. It has not been either validated or approved by Region 5 and any subsequent use by the data user is strictly at the risk of the data user. Region 5 assumes no responsibility for use of unvalidated data.

Analytical Results (Qualified Data)

Page ____ of ____

Case #: 30394

SDG : ME00S1

Site :

CHEMECTO

Lab. :

AATS

Reviewer :

Date :

Sample Number :	ME00S6		ME00S7		ME00S8		ME00S9		ME00T0	
Sampling Location :	X503		X504		X505		X506		X507	
Matrix :	Soil		Soil		Soil		Soil		Soil	
Units :	mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Date Sampled :	04/16/2002		04/16/2002		04/16/2002		04/16/2002		04/16/2002	
Time Sampled :	12:40		13:00		13:20		13:30		13:40	
%Solids :	96.5		99.5		92.6		48.3		99.5	
Dilution Factor :	1.0		1.0		1.0		1.0		1.0	
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	15600		16500		8920		9040		3300	
ANTIMONY	0.99	R	0.96	R	4.6	J	578	J	1450	J
ARSENIC	1.6	J	0.77	UJ	188	J	242	J	110	J
BARIUM	905		1040		777		993		403	
BERYLLIUM	90.9	J	110	J	39.0	J	25.2	J	5.0	J
CADMIUM	7.9	J	3.8	J	793	J	2970	J	180	J
CALCIUM	9440		9430		15700		16500		4440	
CHROMIUM	170		188		54.5		64.8		27.6	
COBALT	203		142		70.1		45.0		31.4	
COPPER	5900	J	3870	J	27900		97700	J	192000	J
IRON	264000		247000		68900		22000		31900	
LEAD	9810	J	7800	J	29400		152000		116000	J
MAGNESIUM	3660		3540		4780		2600		1010	
MANGANESE	2330	J	2490	J	1480		821		466	
MERCURY	0.050	U	0.050	U	2.7		26.6		0.35	
NICKEL	609		410		966		5000	J	5820	J
POTASSIUM	1120		1130		863		548		310	
SELENIUM	0.99	U	0.96	U	12.8	J	32.6	J	3.4	J
SILVER	0.20	UJ	0.19	UJ	17.7	J	62.1	J	49.5	J
SODIUM	6660	J	5830	J	1200		8880	J	2950	J
THALLIUM	10.5		11.9		1.1	U	3.8		0.96	U
VANADIUM	13.2		15.1		18.7		15.0		2.4	
ZINC	73100		71000		79100		217000	J	17200	
CYANIDE	0.10	UJ	0.10	UJ	0.24	J	0.21	UJ	1.3	J

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Analytical Results (Qualified Data)

Page ____ of ____

Case #: 30394
 Site :
 Lab. :
 Reviewer :
 Date :

SDG : ME00S1
 CHEMECTO
 AATS

Sample Number :	ME00T1		ME00T2		ME00T2D		ME00T2S			
Sampling Location :	X508		X509		X509		X509			
Matrix :	Soil		Soil		Soil		Soil			
Units :	mg/Kg		mg/Kg		mg/Kg		mg/Kg			
Date Sampled :	04/16/2002		04/16/2002		04/16/2002		04/16/2002			
Time Sampled :	13:50		13:55		13:55		13:55			
%Solids :	98.7		93.7		93.7		93.7			
Dilution Factor :	1.0		1.0		1.0		1.0			
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	9090		5110		5830					
ANTIMONY	0.99	R	1.1	R	1.1	R	27.2			
ARSENIC	4.6	J	6.9	J	6.7	J	12.9			
BARIUM	403		390		386		759			
BERYLLIUM	60.4	J	33.1	J	35.2	J	50.2			
CADMIUM	18.6	J	23.4	J	25.8	J	30.4			
CALCIUM	13400		11700		13500					
CHROMIUM	136		62.1		62.2		108			
COBALT	132		116		130		220			
COPPER	5450	J	6630	J	6430		7250			
IRON	196000		152000		186000					
LEAD	6790	J	7940	J	9650		8360			
MAGNESIUM	6550		4220		5280					
MANGANESE	2140	J	1960		2120		2170			
MERCURY	0.060		0.11		0.11		0.55			
NICKEL	451		587		580		685			
POTASSIUM	787		955		1070					
SELENIUM	0.99	U	2.3	J	3.0	J	5.8			
SILVER	0.20	UJ	0.21	UJ	0.30	J	5.3			
SODIUM	3030	J	2390	J	2730					
THALLIUM	11.2		13.5		14.0		22.9			
VANADIUM	9.0		4.0		4.6		103			
ZINC	62000		63200		76800		65800			
CYANIDE	0.10	UJ	0.11	UJ	0.11	UJ	3.9			

DISCLAIMER: This package has been electronically assessed as an added service to our customer. It has not been either validated or approved by Region 5 and any subsequent use by the data user is strictly at the risk of the data user. Region 5 assumes no responsibility for use of unvalidated data.



USEPA Contract Laboratory Program Inorganic Traffic Report

Case No: 30394

DAS No:

SDG No:

ME00051

L

Date Shipped: 4/16/02 Carrier Name: UPS Airbill: 1Z6215892210020262 Shipped to: American Analytical & Technical Services, Inc. 1700 West Albany Suite C Broken Arrow OK 74012 (918) 251-0545	Date Received/Received by: <u>4-17-02</u> Lab Contract No: <u>6507056</u> Unit Price: <u>166.75</u>	Sampler (Signature): <u>Bruce Everetts</u>	
	Transfer To: _____ Date Received/Received By: _____ Lab Contract No: _____ Price: _____	Relinquished By: <u>Bruce Everetts</u> Date / Time: <u>4-16-02/1500</u>	Received By: _____
		Relinquished By: _____ Date / Time: <u>4-17-02 9:30</u>	Received By: _____
		Relinquished By: _____ Date / Time: _____	Received By: _____

INORGANIC SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE	STATION LOCATION	SAMPLE COLLECT DATE/TIME	ORGANIC SAMPLE No.	FOR LAB USE ONLY Sample Condition On Receipt
ME00R6	Sediment/ Bruce Everetts	L/G	TM/CN (21)	5-100800 (Ice Only) (1)	X209	4/15/02 15:20		
ME00R7	Sediment/ Bruce Everetts	L/G	TM/CN (21)	5-100801 (Ice Only) (1)	X210	4/15/02 15:00		
ME00R8	Soil/ Bruce Everetts	L/G	TM/CN (21)	5-100802 (Ice Only) (1)	X101	4/16/02 11:00		
ME00R9	Waste/ Bruce Everetts	L/G	TM/CN (21)	5-100803 (Ice Only) (1)	X511	4/16/02 12:00		
ME00S0	Waste/ Bruce Everetts	L/G	TM/CN (21)	5-100804 (Ice Only) (1)	X512	4/16/02 12:10		
ME00S1	Waste/ Bruce Everetts	L/G	TM/CN (21)	5-100805 (Ice Only) (1)	X513	4/16/02 11:50		
ME00S2	Waste/ Bruce Everetts	L/G	TM/CN (21)	5-100806 (Ice Only) (1)	X514	4/16/02 11:30		
ME00S3	Waste/ Bruce Everetts	L/G	TM/CN (21)	5-100807 (Ice Only) (1)	X515	4/16/02 11:40		
ME00S4	Waste/ Bruce Everetts	L/G	TM/CN (21)	5-100982 (Ice Only) (1)	X501	4/16/02 12:50		
ME00S5	Waste/ Bruce Everetts	L/G	TM/CN (21)	5-100983 (Ice Only) (1)	X502	4/16/02 12:50		
ME00S6	Waste/ Bruce Everetts	L/G	TM/CN (21)	5-100984 (Ice Only) (1)	X503	4/16/02 12:40		
ME00S7	Waste/ Bruce Everetts	L/G	TM/CN (21)	5-100985 (Ice Only) (1)	X504	4/16/02 13:00		
ME00S8	Waste/ Bruce Everetts	L/G	TM/CN (21)	5-100986 (Ice Only) (1)	X505	4/16/02 13:20		
ME00S9	Waste/ Bruce Everetts	L/G	TM/CN (21)	5-100987 (Ice Only) (1)	X506	4/16/02 13:30		
ME00T0	Waste/ Bruce Everetts	L/G	TM/CN (21)	5-100988 (Ice Only) (1)	X507	4/16/02 13:40		

COPY	
ORIGINAL DOCUMENTS ARE INCLUDED IN	SDG 11/15/01
Signature	4/19/02
Date	

Shipment for Case Complete? <u>Y</u>	Sample(s) to be used for laboratory QC: <u>ME 00 Q3</u>	Additional Sampler Signature(s):	Cooler Temperature Upon Receipt: <u>4.3°C</u>	Chain of Custody Seal Number: <u>81438</u>
Analysis Key: TW/CN = CLP TAL Total Metals and Cyanide	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G	Custody Seal Intact? <u>Y</u>	Shipment Iced? <u>Y</u>

PR provides preliminary results. Requests for preliminary results will increase analytical costs.

Send Copy Contract Laboratory Analytical Services Support, 2000 Edmund Halley Dr., Reston 20191-3436 Phone 703/264-9348 Fax 703/264-9222

TR Number: 5-055166947-041602-0002



USEPA Contract Laboratory Program

Organic Traffic Report

Case No: 30394

DAS No:

SDG No: ME0051

L

Date Shipped: 4/16/02 Carrier Name: UPS Airbill: 126215892210020262 Shipped to: American Analytical & Technical Services, Inc. 1700 West Albany Suite C Broken Arrow OK 74012 (918) 251-0545	Date Received/Received by: <u>[Signature]</u> 4/16/02		Sampler (Signature): <u>Bruce Everett</u>	
	Lab Contract No: <u>6347756</u> Unit Price: <u>116.75</u>		Relinquished By: <u>[Signature]</u>	
	Transfer To: _____		Date / Time: <u>4-16-02 / 1500</u>	
	Date Received/Received By: _____		Relinquished By: _____	
Lab Contract No: _____ Price: _____		Date / Time: <u>4-16-02 9:30</u>		Received By: <u>[Signature]</u>
Relinquished By: _____		Date / Time: _____		Received By: _____

INORGANIC SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	TAG No/ PRESERVATIVE	STATION LOCATION	SAMPLE COLLECT DATE/TIME	ORGANIC SAMPLE No.	FOR LAB USE ONLY Sample Condition On Receipt
ME:00T1	Waste/ Bruce Everetts	L/G	TM/CN (21)	5-100989 (Ice Only) (1)	X508	4/16/02 13:50		
ME:00T2	Waste/ Bruce Everetts	L/G	TM/CN (21)	5-100990 (Ice Only) (1)	X509	4/16/02 13:55		

Shipment for Case Complete? <u>Y</u>	Sample(s) to be used for laboratory QC: <u>ME 00 Q3</u>	Additional Sampler Signature(s):	Cooler Temperature Upon Receipt: <u>4.3°C</u>	Chain of Custody Seal Number: <u>81438</u>
Analysis Key: TM/CN = CLP TAL Total Metals and Cyanide	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G	Custody Seal Intact? <u>Y</u>	Shipment Iced? <u>Y</u>

PR provides preliminary results. Requests for preliminary results will increase analytical costs.

Send Copy to: Contract Laboratory Analytical Services Support, 2000 Edmund Halley Dr., Reston, VA. 20191-3436 Phone 703/264-9348 Fax 703/264-9222

TR Number: 5-055166947-041602-0002

AMERICAN ANALYTICAL & TECHNICAL SERVICES, INC

1700 West Albany / Broken Arrow, Oklahoma 74012 / Office (918) 251-2858 / Fax (918) 251-2599

SDG NARRATIVE

CONTRACT: 68W00086

DATE: 05/06/02

CASE: 30394

SOW NO.: ILM04.1

MAY 09 2002

SDG: ME00S1

EPISODE NO.: 49374

INORGANIC METAL FRACTION:

Twelve soil samples were submitted for ICP, CN and Hg analysis. No major problems occurred during the digestion or analyses of these samples. The cooler temperatures at time of receipt were at 4.3 ° Celsius. The cooler temperature indicator bottle was present. Sample tags were present. The samples for this SDG were designated as waste matrix on the traffic report. Per the region the samples were logged in as soils. No QC was designated by the sampler. See attached email for correspondence with Dyncorp. The sample's analyses were completed according to the following:

SWL SOP

Method SOP is based

SWL-IN-200

ILM03.0/04.0 (ICP digestion & analysis)

SWL-IN-202

ILM03.0/04.0 (analysis of Hg by cold vapor)

SWL-IN-303

ILM03.0/04.0 (Cyanide)

Initial and Continuing Calibration Checks: No problems

Initial and Continuing Calibration Blanks: The following elements showed low level concentrations below the Contract Required Detection Limit in the Calibration Blank: Al, Sb, Be, Cu, Pb, Mg, Zn, Cn.

No action required.

Linearity near the CRDL (CRA & CRI): The CRI standard was outside of our in house warning limits of 70-130%R for the following elements: Pb, Se, Zn. No action required.

Preparation Blank: The following elements showed low level concentrations below the Contract Required Detection Limit in the Preparation Blank: Al, Ca, Cu, Zn.

No action required

Lab Control Spikes: No problems.

Matrix Spikes: The following elements were outside the control limits of 75-125% recovery: Sb, As, Be, Cd, Se, Ag. All associated samples were flagged with a "N" on Form I's. No action required.

Duplicate(s): The following elements were outside the control limits of 0-20% RPD: Mg. All associated samples were flagged with a "*" on Form I's. No action required.

AMERICAN ANALYTICAL & TECHNICAL SERVICES, INC

1700 West Albany / Broken Arrow, Oklahoma 74012 / Office (918) 251-2858 / Fax (918) 251-2599

Serial Dilution (ICP): The soil serial dilution was outside the control limits of 10% for the following elements: None. No action required.

Sincerely,

A handwritten signature in black ink, appearing to read "Steve Markham", written in a cursive style.

Steve Markham
Operations Manager

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: AMERICAN_ANALYTICAL_AND_T Contract: 68W00086__

Lab Code: AATS__ Case No.: 30394 SAS No.: _____ SDG No.: ME00S1

SOW No.: ILM04.01
5/2/02

EPA Sample No.	Lab Sample ID
ME00S1	49374.01
ME00S2	49374.02
ME00S3	49374.03
ME00S4	49374.04
ME00S5	49374.05
ME00S6	49374.06
ME00S7	49374.07
ME00S8	49374.08
ME00S9	49374.09
ME00T0	49374.10
ME00T1	49374.11
ME00T2	49374.12
ME00T2D	49374.13D
ME00T2S	49374.14S

MAY 09 2002

Were ICP interelement corrections applied ? Yes/No YES

Were ICP background corrections applied ? Yes/No YES

If yes - were raw data generated before
application of background corrections ? Yes/No NO_

Comments:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Steve L. Markham Name: Steve L. MarkhamDate: 05/06/02 Title: Operations Manager

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

ME00S4

Lab Name: AMERICAN_ANALYTICAL_AND_T Contract: 68W00086

Lab Code: AATS Case No.: 30394 SAS No.: SDG No.: ME00S1

Matrix (soil/water): SOIL Lab Sample ID: 49374.04

Level (low/med): LOW Date Received: 04/17/02

% Solids: 98.6

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	16100	-		P
7440-36-0	Antimony	1.0	U	N	P
7440-38-2	Arsenic	2.7	-	N	P
7440-39-3	Barium	983	-		P
7440-41-7	Beryllium	57.3	-	N	P
7440-43-9	Cadmium	62.7	-	N	P
7440-70-2	Calcium	11300	-		P
7440-47-3	Chromium	122	-		P
7440-48-4	Cobalt	200	-		P
7440-50-8	Copper	8610	-		P
7439-89-6	Iron	273000	-		P
7439-92-1	Lead	16300	-		P
7439-95-4	Magnesium	4630	-	*	P
7439-96-5	Manganese	2880	-		P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	846	-		P
7440-09-7	Potassium	1280	-		P
7782-49-2	Selenium	1.0	U	N	P
7440-22-4	Silver	0.20	U	N	P
7440-23-5	Sodium	7060	-		P
7440-28-0	Thallium	8.7	-		P
7440-62-2	Vanadium	12.5	-		P
7440-66-6	Zinc	78500	-		P
	Cyanide	0.10	U		CA

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: CLEAR Artifacts:

Comments:

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

ME00S5

Lab. Name: AMERICAN_ANALYTICAL_AND_T Contract: 68W00086

Lab Code: AATS Case No.: 30394 SAS No.: SDG No.: ME00S1

Matrix (soil/water): SOIL Lab Sample ID: 49374.05

Level (low/med): LOW Date Received: 04/17/02

% Solids: 98.4

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	14900	—	—	P
7440-36-0	Antimony	1.0	U	N	P
7440-38-2	Arsenic	2.2	—	N	P
7440-39-3	Barium	906	—	—	P
7440-41-7	Beryllium	54.1	—	N	P
7440-43-9	Cadmium	66.1	—	N	P
7440-70-2	Calcium	10600	—	—	P
7440-47-3	Chromium	99.6	—	—	P
7440-48-4	Cobalt	186	—	—	P
7440-50-8	Copper	6160	—	—	P
7439-89-6	Iron	256000	—	—	P
7439-92-1	Lead	15400	—	—	P
7439-95-4	Magnesium	3570	—	*	P
7439-96-5	Manganese	2740	—	—	P
7439-97-6	Mercury	0.05	U	—	CV
7440-02-0	Nickel	690	—	—	P
7440-09-7	Potassium	1270	—	—	P
7782-49-2	Selenium	1.0	U	N	P
7440-22-4	Silver	0.20	U	N	P
7440-23-5	Sodium	6970	—	—	P
7440-28-0	Thallium	7.1	—	—	P
7440-62-2	Vanadium	10.7	—	—	P
7440-66-6	Zinc	72900	—	—	P
	Cyanide	0.10	U	—	CA

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: CLEAR Artifacts:

Comments:

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

ME00S6

Lab Name: AMERICAN_ANALYTICAL_AND_T Contract: 68W00086_

Lab Code: AATS_ Case No.: 30394_ SAS No.: _ SDG No.: ME00S1

Matrix (soil/water): SOIL_ Lab Sample ID: 49374.06

Level (low/med): LOW_ Date Received: 04/17/02

% Solids: _96.5

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	15600	-		P
7440-36-0	Antimony	0.99	U	N	P
7440-38-2	Arsenic	1.6	B	N	P
7440-39-3	Barium	905	-		P
7440-41-7	Beryllium	90.9	-	N	P
7440-43-9	Cadmium	7.9	-	N	P
7440-70-2	Calcium	9440	-		P
7440-47-3	Chromium	170	-		P
7440-48-4	Cobalt	203	-		P
7440-50-8	Copper	5900	-		P
7439-89-6	Iron	264000	-		P
7439-92-1	Lead	9810	-		P
7439-95-4	Magnesium	3660	-	*	P
7439-96-5	Manganese	2330	-		P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	609	-		P
7440-09-7	Potassium	1120	-		P
7782-49-2	Selenium	0.99	U	N	P
7440-22-4	Silver	0.20	U	N	P
7440-23-5	Sodium	6660	-		P
7440-28-0	Thallium	10.5	-		P
7440-62-2	Vanadium	13.2	-		P
7440-66-6	Zinc	73100	-		P
	Cyanide	0.10	U		CA

Color Before: BROWN_ Clarity Before: _ Texture: MEDIUM

Color After: YELLOW_ Clarity After: CLEAR_ Artifacts: _

Comments:

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

ME00S7

Lab Name: AMERICAN_ANALYTICAL_AND_T Contract: 68W00086

Lab Code: AATS Case No.: 30394 SAS No.: SDG No.: ME00S1

Matrix (soil/water): SOIL Lab Sample ID: 49374.07

Level (low/med): LOW Date Received: 04/17/02

Solids: 99.5

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	16500	-		P
7440-36-0	Antimony	0.96	U	N	P
7440-38-2	Arsenic	0.77	U	N	P
7440-39-3	Barium	1040	-		P
7440-41-7	Beryllium	110	-	N	P
7440-43-9	Cadmium	3.8	-	N	P
7440-70-2	Calcium	9430	-		P
7440-47-3	Chromium	188	-		P
7440-48-4	Cobalt	142	-		P
7440-50-8	Copper	3870	-		P
7439-89-6	Iron	247000	-		P
7439-92-1	Lead	7800	-		P
7439-95-4	Magnesium	3540	-	*	P
7439-96-5	Manganese	2490	-		P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	410	-		P
7440-09-7	Potassium	1130	-		P
7782-49-2	Selenium	0.96	U	N	P
7440-22-4	Silver	0.19	U	N	P
7440-23-5	Sodium	5830	-		P
7440-28-0	Thallium	11.9	-		P
7440-62-2	Vanadium	15.1	-		P
7440-66-6	Zinc	71000	-		P
	Cyanide	0.10	U		CA

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: CLEAR Artifacts:

Comments:

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

ME00T1

Lab. Name: AMERICAN_ANALYTICAL_AND_T Contract: 68W00086__

Lab Code: AATS__ Case No.: 30394__ SAS No.: __ SDG No.: ME00S1

Matrix (soil/water): SOIL__ Lab Sample ID: 49374.11

Level (low/med): LOW__ Date Received: 04/17/02

% Solids: __98.7

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	9090	-		P
7440-36-0	Antimony	0.99	U	N	P
7440-38-2	Arsenic	4.6		N	P
7440-39-3	Barium	403	-		P
7440-41-7	Beryllium	60.4	-	N	P
7440-43-9	Cadmium	18.6	-	N	P
7440-70-2	Calcium	13400	-		P
7440-47-3	Chromium	136	-		P
7440-48-4	Cobalt	132	-		P
7440-50-8	Copper	5450	-		P
7439-89-6	Iron	196000	-		P
7439-92-1	Lead	6790	-		P
7439-95-4	Magnesium	6550	-	*	P
7439-96-5	Manganese	2140	-		P
7439-97-6	Mercury	0.06	B		CV
7440-02-0	Nickel	451			P
7440-09-7	Potassium	787	B		P
7782-49-2	Selenium	0.99	U	N	P
7440-22-4	Silver	0.20	U	N	P
7440-23-5	Sodium	3030	-		P
7440-28-0	Thallium	11.2	-		P
7440-62-2	Vanadium	9.0	B		P
7440-66-6	Zinc	62000			P
	Cyanide	0.10	U		CA

Color Before: BROWN__ Clarity Before: __ Texture: MEDIUM

Color After: YELLOW__ Clarity After: CLEAR__ Artifacts: __

Comments:

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

ME00T2

Lab Name: AMERICAN_ANALYTICAL_AND_T Contract: 68W00086_

Lab Code: AATS_ Case No.: 30394_ SAS No.: _ SDG No.: ME00S1

Matrix (soil/water): SOIL_ Lab Sample ID: 49374.12

Level (low/med): LOW_ Date Received: 04/17/02

% Solids: _93.7

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5110	-		P
7440-36-0	Antimony	1.1	U	N	P
7440-38-2	Arsenic	6.9	-	N	P
7440-39-3	Barium	390	-		P
7440-41-7	Beryllium	33.1	-	N	P
7440-43-9	Cadmium	23.4	-	N	P
7440-70-2	Calcium	11700	-		P
7440-47-3	Chromium	62.1	-		P
7440-48-4	Cobalt	116	-		P
7440-50-8	Copper	6630	-		P
7439-89-6	Iron	152000	-		P
7439-92-1	Lead	7940	-		P
7439-95-4	Magnesium	4220	-	*	P
7439-96-5	Manganese	1960	-		P
7439-97-6	Mercury	0.11	-		CV
7440-02-0	Nickel	587	-		P
7440-09-7	Potassium	955	B		P
7782-49-2	Selenium	2.3	-	N	P
7440-22-4	Silver	0.21	U	N	P
7440-23-5	Sodium	2390	-		P
7440-28-0	Thallium	13.5	-		P
7440-62-2	Vanadium	4.0	B		P
7440-66-6	Zinc	63200	-		P
	Cyanide	0.11	U		CA

Color Before: BROWN_ Clarity Before: _ Texture: MEDIUM

Color After: YELLOW_ Clarity After: CLEAR_ Artifacts: _

Comments:

Chemetco, Inc. - November 19, 2007					
Scrubber Sludge (Zinc Oxide) & Slag Analysis and Inventory					
		Scrubber Sludge			Slag
		Zn Oxide Bunker (Average)		DIS Bldg (Average)	Slag (Average)
		Bunker	Bunker Cover (3)		
Quantity, tons		33,000	7400	4000	900,000
		Bulk	Mixed Media	Bulk	Bulk
Analyte		Results	Results	Results	Results
		ppm	ppm	ppm	ppm
Metals (primarily as Metal Oxides)					
Aluminum		34762	27809	11771	26531
Antimony		461	369	916	85
Arsenic		140	112	271	6
Barium		1010	808	2522	763
Bismuth		0	0	2	2
Cadmium		2343	1874	5350	1
Calcium		38213	30570	8695	14899
Chromium		177	141	199	2757
Cobalt		67	54	60	177
Copper		69518	55614	92798	17104
Iron		48759	39007	41617	358502
Lanthanum		10	8	61	17
Lead		80378	64303	102698	17320
Magnesium		7631	6105	3158	8027
Manganese		1377	1102	827	3513
Mercury		0	0	3	3
Molybdenum		21	16	158	99
Nickel		4403	3523	2399	1796
Phosphorus		1063	850	842	1725
Potassium		5677	4542	1281	1957
Scandium		3	2	1	1
Silver		70	56	120	3
Sodium		16773	13419	30903	7046
Strontium		109	87	88	238
Thallium		0	0	2	2
Tin		8239	6591	19800	5480
Titanium		1266	1013	399	747
Tungsten		262	209	721	5
Vanadium		32	26	11	51
Zinc		205702	164562	199169	106344
Total Metals (Dry Basis)		528465	422772 (2)	526842	575198
Balance (estimated)					
Silica		60000		60000	143799
Oxides, Carbonates, et al		169109		168589	235326
Soil + Slag + Debris		79270 (1)	577228		
Unaccounted (by difference)		163157		244569	45677
Total Compounds (Dry Basis)		1000000	1000000	1000000	1000000
Moisture Content		30-40%	<5%	10-15%	<5%
Notes: (1) Bunker contains approximately 10% soil					
(2) Bunker Cover on north end contains approximately 42% Scrubber Sludge, with rest being Slag and Slag fines and some scrap metal, soil, and concrete debris					
(3) Bunker Cover contains approximately 58% Slag					

LPC# 199 801 0003 Madison County
Chemetco - Hartford
ILD 048 843 809
SF/HRS

EPA Region 5 Records Ctr.



347276

Expanded Site Inspection



Prepared by:
Office of Site Evaluation
Division of Remediation Management
Bureau of Land

Figure 4
Waste Sample Locations



0 0.03 0.06 0.12 0.18 0.24 - 43 -
Miles



TABLE 1
Sample Descriptions

Sample	SD#	Location	Depth	Description
X108	NA	Collected from the west of Route 3 on the edge of the field and west of the wooded area	0-6 inches	X108 consisted of a brown silty clay. This sample was collected at the edge of the field in an area of grass but outside the wooded area.
X301	NA	Collected from the northwestern portion of the slag parking lot area.	0-3 inches	X301 consisted of a black cindery gravel mix from the slag parking lot area.
X302	NA	Collected from the southwestern portion of the slag parking lot area.	0-1 inch	X302 consisted of a fine silty sandy material with some metal pieces. No cinders in this sample.
X303	NA	Collected from the zinc oxide pile (scrubber sludge)	5-6 inches	X303 consisted of a dark brown grayish material.
X304	NA	Collected from the zinc oxide pile (scrubber sludge)	5-6 inches	X304 was a duplicate of X303. X304 consisted of a dark brown grayish material.
X305	NA	Collected from the east side of the zinc oxide pile (scrubber sludge)	2-4 inches	X305 was collected from a dark brown grayish material.
X306	NA	Collected from a slag pile located in the northeastern portion of Chemetco	0-4 inches	X306 was collected from a fine black slag. An onsite employee remarked that this slag was the most recent.
X307	NA	Collected from a slag pile located in the northeastern portion of Chemetco	0-4 inches	X307 was collected from a fine black slag intermixed with large chunks of slag.
X308	NA	Collected from the southern portion of Chemetco from a slag pile	0-2 inches	X308 was collected from a fine gray slag.
X309	NA	Collected from the southern portion of Chemetco from a slag pile	0-2 inches	X309 was collected from a slag pile. Sample consisted of dusty black slag material.
G101	NA	Collected from a residential well located to the north of Chemetco	depth of well 55 ft	G101 was collected from a residential well located to the north of Chemetco. G101 was obtained from an outside spigot but was filtered. Resident mentioned that there was not any access to an unfiltered sample. This well was just recently installed (April 2008).
G102	NA	Collected from a residential well located to the north of Chemetco	depth of well is unknown	G102 was collected from a residential well located to the north of Chemetco. G102 was obtained from an outside spigot and was unfiltered and unsoftened.
G103	NA	Collected from a residential well located to the west of Chemetco	depth of well is 42 ft	G103 was collected from a residential well located to the west of Chemetco. G103 was obtained from an outside spigot and was raw well water. EPA allowed the water to run for only 5 minutes due to the Resident expressing concerns over his well being almost dry.
G104	NA	Collected from a residential well located to the west of Chemetco	depth of well is 42 ft	G104 (dup) was collected from a residential well located to the west of Chemetco. G103 was obtained from an outside spigot and was raw well water. EPA allowed the water to run for only 5 minutes due to the Resident expressing concerns over his well being almost dry.
G201	NA	Collected from MW 41 which can be found east of Chemetco	Depth of well was 21.9 ft	G201 was collected from a monitoring well located to the east of Chemetco. Depth to water from surface was 12.6 ft. Depth of well was 21.9 ft.
G202	NA	Collected from MW 41 which can be found east of Chemetco	Depth of well was 21.9 ft	G202 (dup) was collected from a monitoring well located to the east of Chemetco. Depth to water from surface was 12.6 ft. Depth of well was 21.9 ft.
G203	NA	Collected from MW 16 which is located in the zinc oxide spill area.	Depth of well was 10.2 ft	G203 was collected from MW 16, which is located in the zinc oxide spill area. Depth to water from surface was 1.5 ft. Depth of well was 10.2 ft.

Table 3
Waste Sampling Results

Sample Number	ME00G0			ME00E9		ME00F0		ME00F1		ME00F2		ME00F3		ME00F4		ME00F5		ME00F6		ME00F7		
Sampling Location	X107 Background			X301		X302		X303		X304		X305		X306		X307		X308		X309		
Matrix :	Soil			Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		
Units :	mg/Kg			mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		
Date Sampled :	5/7/2008			5/6/2008		5/6/2008		5/6/2008		5/6/2008		5/6/2008		5/6/2008		5/6/2008		5/6/2008		5/6/2008		
Time Sampled :				parking		Parking		Zn pile		Zn pile		Zn pile		slag pile		slag pile		slag pile		slag pile		
%Solids :	66.7			90.2		79.4		48.5		47.6		64.9		97.8		97.3		96		98.6		
Dilution Factor :	1			1		1		1		1		1		1		1		1		1		
ANALYTE	Result	Flag		Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	
ALUMINUM	9480		28440	6450		7800		7790		8190		8460		17800		15800		7250		9550		
ANTIMONY	9.1	UJ	27.3	91	42.1	J	199	J	612	J	534	J	534	J	6.1	UJ	12.3	UJ	6.3	UJ	50.6	J
ARSENIC	9.9	J+	29.7		21.6		31.9		194		206		147		1	J	4.7	J+	7.4		43.3	
BARIUM	246	J	738	2460	718		528		5750		6110		1290		1110		934		507		2190	
BERYLLIUM	1		3	10	18	J	20.9	J	23.1	J	22.3	J	32.2	J	109	J	78.3	J	52.3	J	33	J
CADMIUM	3.1	J	9.3	31	208		234		3500		3690		3180		12		32.2		42.9		441	
CALCIUM	9030		27090		129000		44000		21500		21800		29400		9150		11600		11500		20500	
CHROMIUM	15.7		47.1	157	64.1	J	65.8	J	51.9	J	54.8	J	73.7	J	296	J	180	J	97.8	J	126	J
COBALT	7.8		23.4		51.1		38.1		42.3		43.8		91.8		172		105		135		110	
COPPER	204	J	612	2040	33100		145000		91700		91900		108000		8910		4140		8550		38400	
IRON	14900		44700		68700		49100		19600		20600		29100		251000		248000		183000		186000	
LEAD	185		555		11500		23300		120000		123000		139000		10100		11300		8190		27900	
MAGNESIUM	3760		11280		10300		6300		2880		2980		3360		3920		4080		4000		3900	
MANGANESE	577		1731		1080		1340		944		982		1020		2900		2770		2010		1380	
MERCURY	0.082	J	0.246	0.82	0.78	J+	2.3	J+	27.3	J+	28.9	J+	21	J+	0.1	U	0.098	U	0.12	U	1.2	J+
NICKEL	28.2		84.6		981		1280		3570		3640		6000		975		554		549		1050	
POTASSIUM	2420		7260		589		491	J	257	J	294	J	291	J	1550		1150		597		692	
SELENIUM	1.7	J	5.1	17	4.5	J	5.5	J	29	J	31.1	J	23.3	J	4.8	J	5.1	J	3.8	J	6.3	J
SILVER	1.5	U	4.5	15	28.8	J-	61	J-	80.9	J-	82.8	J-	94.3	J-	9.8	J	7.9	J	9.3	J	37.2	J-
SODIUM	51.3	J	153.9	513	1260		864		520	J	538	J	1160		5690		5910		1830		2410	
THALLIUM	1.3	J	3.9	13	2.8	R	3.1	R	5.5	J	6.4	J	8.3	J-	0.85	J	3.7	J	2.6	R	6.1	J
VANADIUM	24.6		73.8		13.4		6.3	UJ	10.2	UJ	10.5	UJ	8.9		5.1	UJ	5.1	UJ	5.3	UJ	5.1	UJ
ZINC	355		1065		30700		56500		214000		223000		247000		67200		79100		67000		81400	
CYANIDE	3.7	UJ	11.1		2.8	UJ	3.1	UJ	5.2	UJ	5.3	UJ	3.9	UJ	2.6	UJ	2.6	UJ	2.6	UJ	2.5	

indicates that the sample result is at least three times background concentrations

Chemetco, Inc. - March 3, 2009

Scrubber Sludge (Zinc Oxide) & Slag Analysis and Inventory

Note: The Bankruptcy Estate of Chemetco, Inc. does not guarantee or warrant the quantity, composition, or accuracy of the data presented. Interested parties can make arrangements to visit the smelter site and perform their own sampling and data collection.

Scrubber Sludge/Zinc Oxide												Slag	
Zn Oxide Bunker (Average)												Slag (Average)	
Bunker (Concrete floor and 11' high concrete walls, open top used to store scrubber sludge as a RCRA SWMU)				Bunker Cover (3) (mixture of scrubber sludge and slag placed on top of north end of bunker)		DIS Bldg (Average) Uncontaminated filter cake		Receiving Bldg (Average) (DIS filter cake package in supersacks for overseas shipments that never occurred)					
Quantity, tons		33,000		7400		4000		200		900,000			
		Bulk		Mixed Media		Bulk		100-2ton		Bulk			
		Results		Results		Results		Supersacks					
Analyte		ppm	%	ppm	%	ppm	%	ppm	%	ppm	%		
Metals (primarily as Metal Oxides)													
Aluminum	34762	3.48%	27809	2.78%	11771	1.18%	11771	1.18%	26531	2.65%			
Antimony	461	0.05%	369	0.04%	916	0.09%	916	0.09%	85	0.01%			
Arsenic	140	0.01%	112	0.01%	271	0.03%	271	0.03%	6	0.00%			
Barium	1010	0.10%	808	0.08%	2522	0.25%	2522	0.25%	763	0.08%			
Bismuth	0	0.00%	0	0.00%	2	0.00%	2	0.00%	2	0.00%			
Cadmium	2343	0.23%	1874	0.19%	5350	0.54%	5350	0.54%	1	0.00%			
Calcium	38213	3.82%	30570	3.06%	8695	0.87%	8695	0.87%	14899	1.49%			
Chromium	177	0.02%	141	0.01%	199	0.02%	199	0.02%	2757	0.28%			
Cobalt	67	0.01%	54	0.01%	60	0.01%	60	0.01%	177	0.02%			
Copper	69518	6.95%	55614	5.56%	92798	9.28%	92798	9.28%	17104	1.71%			
Iron	48759	4.88%	39007	3.90%	41617	4.16%	41617	4.16%	358502	35.85%			
Lanthanum	10	0.00%	8	0.00%	61	0.01%	61	0.01%	17	0.00%			
Lead	80378	8.04%	64303	6.43%	102698	10.27%	102698	10.27%	17320	1.73%			
Magnesium	7631	0.76%	6105	0.61%	3158	0.32%	3158	0.32%	8027	0.80%			
Manganese	1377	0.14%	1102	0.11%	827	0.08%	827	0.08%	3513	0.35%			
Mercury	0	0.00%	0	0.00%	3	0.00%	3	0.00%	3	0.00%			
Molybdenum	21	0.00%	16	0.00%	158	0.02%	158	0.02%	99	0.01%			
Nickel	4403	0.44%	3523	0.35%	2399	0.24%	2399	0.24%	1796	0.18%			
Phosphorus	1063	0.11%	850	0.09%	842	0.08%	842	0.08%	1725	0.17%			
Potassium	5677	0.57%	4542	0.45%	1281	0.13%	1281	0.13%	1957	0.20%			
Scandium	3	0.00%	2	0.00%	1	0.00%	1	0.00%	1	0.00%			
Silver	70	0.01%	56	0.01%	120	0.01%	120	0.01%	3	0.00%			
Sodium	16773	1.68%	13419	1.34%	30903	3.09%	30903	3.09%	7046	0.70%			
Strontium	109	0.01%	87	0.01%	88	0.01%	88	0.01%	238	0.02%			
Thallium	0	0.00%	0	0.00%	2	0.00%	2	0.00%	2	0.00%			
Tin	8239	0.82%	6591	0.66%	19800	1.98%	19800	1.98%	5480	0.55%			
Titanium	1266	0.13%	1013	0.10%	399	0.04%	399	0.04%	747	0.07%			
Tungsten	262	0.03%	209	0.02%	721	0.07%	721	0.07%	5	0.00%			
Vanadium	32	0.00%	26	0.00%	11	0.00%	11	0.00%	51	0.01%			
Zinc	205702	20.57%	164562	16.46%	199169	19.92%	199169	19.92%	106344	10.63%			
Total Metals (Dry Basis)		528465	52.85%	422772	42.28%	(2)	526842	52.68%	526842	52.68%	575198	57.52%	
Balance (estimated)													
Silica	60000	6.00%		0.00%	60000	6.00%	60000	6.00%	143799	14.38%			
Oxides, Carbonates, et al	169109	16.91%		0.00%	168589	16.86%	168589	16.86%	235326	23.53%			
Soil + Slag + Debris	79270	7.93%	(1)	577228	57.72%			0.00%		0.00%			
Unaccounted (by difference)	163157	16.32%			0.00%	244569	24.46%	244569	24.46%	45677	4.57%		
Total Compounds (Dry Basis)		1000000	100.00%	1000000	100.00%		1000000	100.00%	1000000	100.00%	1000000	100.00%	
Moisture Content		30-40%		<5%			10-15%		10-15%		<5%		
Notes:													
(1) Bunker contains approximately 10% soil													
(2) Bunker Cover on north end contains approximately 42% Scrubber Sludge, with rest being Slag and Slag fines and some scrap metal, soil, and concrete debris													
(3) Bunker Cover contains approximately 58% Slag													